STRUCTURE? PHOOEY!
"Virtual" corporations can win business without the overhead costs of traditional organizations. Page 84

JOBS YOU WANT
What are the best bets if you're job-hunting? Page 50

JOBS YOU NEED TO FILL
How do you find the right candidate? Try looking close to home, and ask the right questions. Pages 92, 88

COMPUTERWORLD

MICROSOFT USERS COOL TO 'PC PLUS'

PC dominance won't help new strategies

BY DAVID ORENSTEIN

Microsoft closed this summer stepping up its romance of the market for Internet appliances. Call it the summer of PC Plus. So far, though, many users don't see it as a definite plus for them.

Microsoft uses the term PC Plus to refer to devices such as handheld computers, wireless phones, TV set-top boxes and network computers. Since May, when the company announced a $5 billion deal with

AT&T Corp. to put Windows CE on millions of set tops. Microsoft has poured another $600 million into similar ventures (see chart, page 113).

In total, Microsoft has spent
PC Plus, page 113

IT QUESTIONS IN WAKE OF BIG MERGERS

Internet challenges top CBS, Viacom list

BY THOMAS HOFFMAN

Viacom Inc.'s $36 billion bid last week to acquire New Yorkbased CBS Corp. creates two significant challenges for the companies' information technology organizations: crafting an Internet strategy to cross-promote their brands while supporting a network of television stations that may require divestitures to satisfy antitrust concerns.

CBS CEO Mel Karmazin said he expects that the new Viacom "will be one of the leading
CBS, Viacom, page 16

Layoffs, consolidation likely at hotel firms

BY STACEY COLLETT

The integration of systems at Hilton Hotels Corp. and Promus Hotel Corp. — which announced a $4 billion merger last week — should be easier than usual because both companies have the same type of core reservation system.

But system consolidations and layoffs of information technology personnel are highly likely, observers said.

The merger, to be completed by year's end, is expected to save the companies $90 million.
Hotel Merger, page 16

WEB SITES CRACK DOWN ON FRAUD

E-commerce sites vow to police themselves to combat image of 'the Wild, Wild Web'

BY JULIA KING

Online auctioneer eBay Inc. is officially on record as having "zero tolerance" for selling illegal items on its wildly popular Web site.

Yet that didn't stop online listings for a human kidney, various other body parts and at least three babies from making their way onto the auction site earlier this month. EBay shut down the sales after learning of the listings.

These and other incidents serve up some critical lessons for e-commerce companies.

First, "the Web is not the Wild West anymore, but it's not that far away from it either. You can't just put up an online service or store and then ignore it," said Jeremy Jaffe, vice

president of e-commerce at Liberty Financial Co.

Second, policy statements alone pack zero punch in the online marketplace.

What's also needed, experts said, are business processes and company systems to ensure compliance.

Boston-based Liberty had to revamp its real-world business work in the online world. For example, all information the company publishes must be compliant with regulations set by the National Association of Securities Dealers Inc. Yet at first, the process

for posting information online included no such compliance review.

One reason is that "initially, doing business on the Web was seen as a hobby, a kind of experiment," Jaffe said. Now, online posting procedures have been changed to include review by a compliance officer.

At Crossmarket.com, a Medfield, Mass.-based business-to-business online auction, executive like Jayson Score have imposed on themselves the same rules and procedures that apply to real-world auctioneers as a means of protecting themselves against online fraud.

"We take fiduciary responsibility for all transactions, and
Fraud, page 113

FACES OF Y2K

D ISASTER RECOVERY TEAMS are huddling in Y2K war rooms. Banks are preparing customer-relations programs. Corporations and communities throughout North America are racing to meet the ultimate inflexible deadline: the rollover of computer calendars to 01/01/00 (we hope!). So Computerworld sent a team of photographers to spotlight the men and women who are on the Y2K front lines.
Photo essay begins on page 56.

WALTER TAYLOR of Delta Air Lines is a key player on the Y2K front line in a critical industry

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94 QUICKSTUDY: Tool Command Language is a great way to tie apps together, especially on the Web. We explain how it works and why it's important.

96 OPEN-SOURCE software has some pretty big advantages and some significant drawbacks.

THIS AIN'T COMDEX

But the annual Burning Man technology and arts festival did showcase some neat technology, including an innovative two-way satellite link to the Internet and purple lightning by a guy named Dr. Megawatt. Really. Pages 20–21

COMPUTERWORLD

SEPTEMBER 13, 1999

WOULD YOU LIKE TO COME TO MY TEMPLE FOR A FOOT MASSAGE?

AN ANONYMOUS YOUNG MAN (DRESSED IN A WHITE CORSET AND DRINKING ABSINTHE) TO A YOUNG WOMAN (DRESSED ONLY IN HOOF PANTS) AT THE BURNING MAN TECH AND ARTS FESTIVAL, 12½ MILES NORTH OF RENO, NEV. THE WEIR REPORTER LAROB DAY, THE YOUNG WOMAN TOOK OF THE GENTLEMAN'S INVITATION, AND THEY DISAPPEARED ACROSS THE BURNING DESERT SEE STORY OF OTHER ASPECTS OF THE FESTIVAL, PAGE 20.

ERP Faces Net Server Issues

Some queries are being diverted from the back office to avoid throughput problems

BY CRAIG STEDMAN

COMPANIES hooking ERP systems to the Internet are facing a new issue: whether they should let customers directly query the back-office software — at the risk of bogging down the system — or divert them to a separate database server.

For Swiftwater, Pa.-based Pasteur Merieux Connaught USA, a maker of vaccines, the answer is to off-load the most resource-intensive queries from its SAP AG enterprise resource-planning (ERP) system.

Pasteur and several customers are testing an application that lets doctors and hospitals reach directly into the SAP R/3 back-office system to place orders and view their purchase histories. But for more detailed analysis of the buying records, the company plans to shunt the customers to a stand-alone report server.

"We don't want to use SAP as a data warehouse," said Rick Troiani, a senior programmer analyst at Pasteur. "We don't even let in-house people report off of the SAP system here."

The report server should be in place this fall, Troiani said. Reports will be generated from an existing data warehouse that gets nightly feeds of data

Tying ERP To the Web

Read ERP access for external users: Lets customers enter purchase orders via the Web and gives them an up-to-the-minute view of information, such as order status and inventory availability. But the complex queries without slowing down transaction throughput.

Staging data outside the ERP system: The information available to customers may be a tiny bit of data only pulled out of the ERP applications nightly. But billing records and other historical data can be queried and analyzed without running the risk of bogging down the ERP system.

from the R/3 system. Pasteur expects to use Web application server software developed by Allaire Inc. in Cambridge, Mass., to link customers to the reporting engine, the same setup it's using to let them enter online orders into R/3.

Giving outside users direct Web access to an ERP system to look up historical data "may work for smaller companies that don't have a huge number of customers," said David Caruso, an analyst at AMR Research Inc. in Boston.

But, like Pasteur, many large users are staging that kind of information outside their ERP applications in order to "hedge their bets," Caruso said. "There's just a lot of unknowns right now" about the possible impact on transaction throughput, he added.

Some software vendors are starting to address the issue. For example, Acta Technology Inc. in Palo Alto, Calif., this week plans to announce a package that will let users build separate caches of R/3 data for their customers to query via the Web.

Green Mountain Coffee Inc., a coffee roaster in Waterbury, Vt., hopes to avoid the need to do that sort of data staging for a new ERP-based online sales application. The e-commerce link was turned on for consumers this summer and is due to be expanded in the fall.

Customers now go directly into Green Mountain's ERP system, which is built on applications from PeopleSoft Inc. in Pleasanton, Calif. But the ERP database server "is the single throttle point that we have to stay ahead of," said Green Mountain CIO Jim Prevo.

Andreessen Steps Down

Web pioneer and Netscape Communications Corp. co-founder Marc Andreessen said Friday he's stepping down from his post as America Online Inc.'s chief technology officer, which he assumed in January after AOL acquired Netscape. Andreessen will become a part-time consultant to AOL. He will be succeeded by William J. Raduchel, who was chief strategy officer at Sun Microsystems Inc.

Federal Systems Still Lag on Y2K

The Y2K readiness of airports and some Federal Aviation Administration information systems, along with numerous other federal systems, remains in doubt, according to the congressional committee monitoring federal year 2000 repairs. The House subcommittee on Government Management, Information and Technology said Friday that 5% of the government's mission-critical systems have not been repaired, including postal, Medicaid and immigration systems.

Short Takes

SUN MICROSYSTEMS and the Federal District Court in San Jose to reinstate an injunction in its Java lawsuit against MICROSOFT CORP. An appeals court lifted the injunction last month . . . Officials representing the nation's top stock markets, including the NEW YORK STOCK EXCHANGE and the NASDAQ STOCK MARKET INC., said Wall Street is completely prepared to handle the year 2000 date change. . . . Chief executives from some of the world's largest companies will gather in Paris today to discuss strategies for heading off e-commerce consumer concerns. . . . The BRAZILIAN POSTAL SERVICE has hired UNISYS CORP.'s Brazilian subsidiary to integrate its branch offices in a 350 million contract. . . . MICROSOFT said an outside security firm will audit its Hotmail free e-mail service after a security breach exposed users' accounts to would-be intruders. . . . Microsoft acted at the suggestion of the nonprofit online privacy monitor Truste in Palo Alto, Calif.

NetWare 5 Gets Clustering

Novell's services beat Microsoft to market

BY DAVID ORENSTEIN

After more than two years of struggling to bring it to market, Novell Inc. will announce clustering services for NetWare 5 at Networld/Interop '99 in Atlanta this week, observers said.

Dell Computer Corp. will be among the hardware vendors joining Novell in its announcement and has already helped the University of Idaho build a four-server cluster, said Jenny Helms, a Dell systems consultant.

The Round Rock, Texas, PC and server maker said it will certify NetWare clustering across its server line. The technology, which entered its third price this summer, will let users connect up to eight servers in a cluster, although Novell has demonstrated 16 nodes in a lab.

Ed Szwickl, an author and managing director of the Portland (Ore.) Area NetWare Users Group, said clustering is worthwhile not only for file and print servers — NetWare's primary market — but it can also keep Novell Directory Services running on NetWare.

If the directory fails, he said, applications that depend on it could grind to a halt.

Richard Ketcham, president of the Orange County (Calif.) NetWare Users Association, said his Yorba Linda, Calif., consulting company, Datapointe, is working with a multibillion-dollar construction firm that is evaluating Novell's clustering services to strengthen its 600-server network.

As tough as Novell's road to market has been — the first of five dissolved into a lawsuit — the software still bears Microsoft's clustering enhancements to market by a few months, said Laura DiDio at Giga Information Group Inc. in Cambridge, Mass.

Clustering services are most frequently used for servers that host Web content, applications and data rather than file and print servers.

EDS Makes Services Move

Four new business units are formed

BY CRAIG STEDMAN

Electronic Data Systems Corp. last week announced the latest in a series of reorganization moves made by CEO Dick Brown, who was hired early this year to shake up the outsourcer's stately image.

The latest step organizes the Plano, Texas, company's service offerings into four business units: the flagship outsourcing business, management and e-procurement and enterprise applications groups, the A.T. Kearney consulting division and a newly separate business process management operation.

As part of the move, which is due to take effect next month, EDS said it also will set up new vertical-industry consulting teams and assign a single employee to manage relationships with each of its customers.

Peter Bendor-Samuel, president of Everest Group, a Dallas firm that consults with users on outsourcing deals, said change has been long overdue at EDS. It "became very bureaucratic and was really losing ground on the whole services industry," he said.

But Brown still has to do "a lot more slimming down" at EDS while trying to find a way to build up the company's non-outsourcing businesses, Bendor-Samuel added. "EDS has been and still is primarily a mainframe outsourcer."

After Brown was brought in, EDS in the spring eliminated 5,200 jobs — or about 4% of its workforce — and last month said it would offer early retirement incentives to as many as 8,000 employees. More than a half-dozen top executives have also left the company

NEWS

Instant Chat Finds Home In E-Commerce Sites

Apps seen as customer service tool; AOL client part of key deal

BY DOMINIQUE DECKMYN
AND JULIA KING

INSTANT MESSAGING has threaded its way into online business as a tool to deliver customer support and convert Web site visitors into buyers.

FaceTime Communications Inc. in Foster City, Calif., will announce this week an agreement with America Online Inc. that lets owners of e-commerce sites communicate with visitors using the popular AOL Instant Messenger client. Face-Time claims to be the first business-to-consumer tool authorized to use the AOL network. FaceTime said it is also in negotiations with Microsoft Corp. and Yahoo Inc. about connecting to their respective messaging technologies.

Several vendors, including FaceTime and Austin, Texas-based Acuity Corp. have been offering software that allows a customer to engage in a real-time text chat with a customer

In a recent survey of 125 online sites, more than half never responded to e-mailed customer service inquiries, took more than five days to reply or failed to offer an e-mail address at their site.

Only 3% of major e-commerce sites offer a live "help" button

SOURCE: JUPITER COMMUNICATIONS

service representative using a browser window. Integrating that with the increasingly popular instant messaging is an obvious next step, said Jonathan Penn, an analyst at Giga Information Group Inc. in Santa Clara, Calif. "You have to give consumers as many options as possible to contact you," said Penn.

Acuity will also announce that it is being acquired by

Quintus Corp. in Fremont, Calif., a developer of call center software.

Reno, Nev.-based iGo.com Corp., a retailer of accessories for mobile computers, uses FaceTime to have "several hundred" chat sessions with customers every day, said CEO Ken Hawk. The chat sessions have yielded a "significantly increased" rate of converting visitors to buyers, said Hawk. He said the AOL deal will make it even easier for customers to communicate directly with online businesses.

Text Chat Problems

But text chat has its drawbacks. "Text-to-text is difficult" and hasn't worked to increase the number of browser visitors who become buyers, said Keith Clougherty, CEO and founder of Roxy.com, Inc., an online consumer electronics retailer. Roxy.com answers questions in real time via both text chat and Internet-based

audio, which it integrated into Acuity's WebCenter software. Lengthy text chats can turn off users, said Clougherty.

Others worry about the additional investment in service staff.

"I'd have a hard time justifying the cost for that," said Norman Hullinger, vice president

of sales and operations at online retailer Egghead.com Inc. in Vancouver, Wash.

Bruce Mowery, vice president of marketing and business development at online health and beauty store Mom.com Inc. in San Francisco, is using real-time chat only in the checkout area of his Web site, where the benefits are highest. Typically, about 30% of online buyers never complete their purchase, so "if you can get that number down by 10 points, you can already see a big return on investment," said Mowery. ►

E-Mail Response Software on Rise

To deal with the flood of customer e-mail, more companies are turning to automated response software, according to a new study from Inter-national Data Corp. (IDC) in Framingham, Mass. But users are asking vendors to integrate the software with call center programs, e-mail marketing and instant messaging applications.

E-mail response software was a $30 million market last year and is expected to reach $75 million this year and $350 million in 2003, said Mark Levitt, an analyst at IDC. "Most of the companies doing business on the Web [still] don't have such a solution in place," Levitt said. But it might well disappear as a distinct market as the integration process continues.

Jack Rodgers, president of the Consumer Direct Group at online mortgage supplier Mortgage.com Inc. in Plantation, Fla., said

Brightware Server from Brightware Inc. in Novato, Calif., generates automatic responses to about 80% of e-mail queries, dramatically cutting the workload for Mortgage.-com's 300-member customer service staff. If a single vendor were to come up with an integrated product combining call center features with other forms of customer interaction, it would greatly benefit Mortgage.com, Rodgers said.

E-mail response management vendors are already moving in that direction. Last month, Kana Communications Inc. in Palo Alto, Calif., said it would acquire Connectify Inc. in nearby San Mateo, Calif., which develops e-mail marketing software.

And in May, eGain Communications Corp. acquired Sitebridge Corp., which develops real-time chat software.

— Dominique Deckmyn

Ford Suit May Be a Draw

Both sides claim victory as judge rules

BY KATHLEEN OHLSON

Both sides claimed victory last week as a judge granted only part of Ford Motor Co.'s request for a preliminary injunction against a Web site operator who has been publishing confidential Ford materials.

U.S. District Court Judge Nancy G. Edmunds barred Robert Lane of Dearborn, Mich., from infringing on Ford copyrights, including publishing internal Ford documents on his Web site or soliciting confidential information from Ford employees. But she denied Ford's request to enjoin Lane from using, copying or disclosing internal Ford documents on his site.

The judge noted the irony of

the huge car company being held hostage by an individual with an ax to grind.

"Technology plays the traditional identities of David and Goliath," she wrote. Nonetheless, she concluded, "The courts have steadfastly held that the First Amendment does not permit the prior restraint of speech."

Lane's Web site declared a victory for the Constitution, while Ford claimed its rights had been upheld.

The court found that although Lane may have violated the Michigan Uniform Trade Secrets Act when he published confidential Ford documents on his site, an injunction restraining publication of Ford

trade secrets would constitute an invalid prior restraint of free speech.

Edmunds cited precedents such as the federal government's failed attempt to stop the publication of the Pentagon Papers by *The New York Times* during the Vietnam War.

"Ford's trade secrets . . . are certainly not more volatile than those at issue in the Pentagon Papers case."

However, the judge held open the possibility that Ford could press the issue when she noted that although a defendant's improper conduct in obtaining information (information doesn't justify prior restraint, "the legal system may yet provide redress through criminal prosecution."

That's no option Ford says it plans to pursue. "We're continuing with litigation," said spokesman Jim Cain. "[Lane] has damaged our business, and we'll quantify that at trial." ►

U.S. Open Online Sales Soar

BY THOMAS HOFFMAN
FLUSHING MEADOWS, N.Y.

Thanks in part to the U.S. Open's use of a sophisticated data mining tool, organizers have sold three times as many T-shirts, hats and other trinkets on the tennis tournament's Web site in 10 days as it did during the two-week event last year.

Some of the surge can be attributed to a 30% year-to-year increase in overall site traffic, but IBM, which is hosting the www.usopen.org site, claims that its SurfAid Web analytics

tool has helped the U.S. Tennis Association (USTA) determine that T-shirts — followed by accessories and hats — are the top-selling merchandise and deserve aggressive promotions.

"We're selling more merchandise this year than we've ever done before," said Pierce O'Neil, marketing director for the USTA. IBM officials said the online pro shop had sold $180,000 worth of gear through Sept. 7, up from $60,000 during last year's U.S. Open tournament. ►

Sun's Third Client Try May Be Charm

Smart card security feature, access to Windows NT, Unix and Java applications

BY STACY COLLETT
NEW YORK

SUN MICROSYSTEMS Inc. wants to make computing as easy and reliable as using any home appliance. Its new thin-client offering comes close, observers say.

The Sun Ray 1, unveiled last week, is a notebook-size unit that manages a keyboard, mouse and monitor. It relies on Sun SPARC servers running a Solaris operating environment and Sun Ray enterprise server software for all its processing power and applications, which saves time and money on upgrades and maintenance. It also runs applications from Linux, Windows NT, Unix and Java platforms. The servers are priced from $5,000.

More intriguing is Hot Desk, Sun's smart-card technology that lets applications be directed to any desktop in the workgroup so they don't have to be reopened. A users can freeze a word-processing session, for example, by unplugging the system or removing his access card. When the card is inserted into another terminal, the application reappears, with all changes intact. Users also can take presentations to meetings by carrying their smart card and inserting them into a conference room appliance.

"Our goal is ubiquitous computing," said Duane Northcutt, the Sun engineer who led the project.

Sun said it plans to license Hot Desk technology to manufacturers so they will create devices enabled with smart cards.

Smart card access devices on PCs aren't new, said Andy Bochman, an analyst at Aberdeen Group Inc. in Boston. "But the idea that what you see

travels where you are is new," he added.

Bank of Nova Scotia in Toronto has been using 50 Sun Rays to run both NT and Unix-based applications since March, eliminating the need for two PCs and monitors on workers' desks. Senior Vice President Gail Smith said he

SUN PRESIDENT ED ZANDER says the company has learned from past thin-client efforts

has found the Sun Rays' performance to be "as good, if not better than" that of the PCs. He added that he plans to replace more of the company's 350 PCs with Sun Rays.

Sun Ray appliances can be leased for $9.99 per month or purchased for $499. Monitors are sold separately and usually cost several hundred dollars.

James Pennington, a vice president at Charlotte, N.C.-based The LearningStation .com, which provides applications to schools via the Web, has also tested the Sun Ray. He said he found the cost of a complete system to be about $700.

For $30 per month, users can lease the

appliance, plus a Sun Enterprise workgroup server, monitor, Ethernet switch, Sun Ray server software and Sun's new StarOffice productivity suite (which can be downloaded free from the Internet).

This is Sun's third try at a thin-client offering. Previous JavaStations failed to catch on because they supported only a few applications.

"We've learned a lot over the last two years," said Ed Zander, Sun's president and chief operating officer. "Today's technology is anything but what we've seen in the past." ◗

Voice Over IP Heads Networld/Interop List

Gigabit Ethernet, net tools also on tap

BY SAMI LAIS

An expected crowd of more than 50,000 at Networld/Interop '99 in Atlanta this week will hear the major chords of the future — voice, data and video over IP; managing networks to meet business goals, Gigabit Ethernet over copper and high-touch routers.

Virtual Private Networks "are a hot topic for us as a way for our clients to securely get into our network," said David Lembke, network services manager at Investors Fiduciary Trust Co. in Kansas City, Mo. The company plans next year to go to Gigabit Ethernet over copper for its LAN backbone.

As in years past, users such as Lembke are interested in voice over IP, but aren't yet ready to make the leap. "It's next, but we have a lot invested in our Lucent [Technologies

Inc.] network," he said.

But what users will be calling for is interoperability and ease of use, industry analysts predicted.

"I think we'll see a lot of fast-discovery, easy-to-use, plug-in solutions," said Richard Ptak, an analyst at Hurwitz Group Inc. in Framingham, Mass.

One package that could fall into that category is Open-River 2.0, which RiverSoft Inc. in New York bills as an interventionless network management product. An installation wizard walks users through installation while it autodiscovers the network, RiverSoft said. Version 2.2 will ship Nov. 1 and cost $6,000 for a 25-device environment.

Users will see Computer Associates International Inc.'s NetWorIT 2.0 in action, running the network for Networld/Interop. Announced today, the new version of the stand-alone network management software replaces Net-WorkIT 1.0 and NetWorkIT

Pro. It runs on HP-UX, Solaris and Windows NT.

CA is also filling the help desk slot for the show network with its Unicenter TNG Help Desk 4.0. "The integration between the two was very compelling for us," said Steve Wylie, network operations manager at Networld/Interop. "Part of their pitch was we don't need rocket scientists to set it up," he said.

Under wraps until later this week is an announcement on network security from Intel Corp. along with Compaq Computer Corp., Entrust Technologies Inc., IBM and Microsoft Corp.

And Cisco Systems Inc. will unveil a new initiative on convergence — voice over IP, data and video — and the corporate enterprise.

The company will also show its Service Level Management Suite, an extension to Cisco-Works2000. The product is set to ship early next year and will cost about $15,000. ◗

Microsoft, Expert Dispute Claims About Windows Security

BY ANN HARRISON

An independent security expert has questioned allegations made earlier this month that the National Security Agency has a back door to Microsoft Corp.'s Windows platform. Microsoft also denies the charge.

Andrew Fernandes, chief scientist at Cryptoonn Corp., a Mississauga, Ontario-based security software company, said one of two keys Microsoft uses to digitally sign cryptography suites that secure data is called "NSAKEY" in the code. This led to suspicions that the NSA had the ability to sign cryptography suites or insert a "Trojan horse" — both of which could compromise encrypted data on Windows 95, 98, 2000 and NT systems.

But cryptographer Bruce Schneier, president of Counterpane Systems, a Minneapolis-based cryptography and security consultancy, noted that if the NSA wanted to compromise Microsoft's CryptoAPI, which supports the encryption of data in Windows programs, it would be easier for it to persuade the company to divulge its signature key or install an NSA-compromised security module.

Schneier also pointed out that the NSA doesn't necessarily need a key to compromise security in Windows because programs like Back Orifice can do that to most systems without keys. Back Orifice is a Trojan horse that allows attackers to access Windows PCs remotely.

Perhaps the biggest tip-off to skeptics was the name of the key itself. If the NSA did have a secret key, naming it NSAKEY would seem too obvious. Though companies that don't release their source code for review, such as Microsoft, are always under suspicion that they could be hiding back doors in their products, anyone with a ,debugger could have found the NSAKEY name, Schneier observed.

Microsoft's security product manager, Scott Culp, denied that the NSAKEY key is actually shared with the National Security Agency and asserted that the company has no back doors in any of its products.

Culp said the NSAKEY key is a backup to its primary digital-signature key used to enforce encryption export regulations. Current U.S. law limits exportable software products to 56-bit cryptography without a waiver. Culp noted that export licenses are granted by the U.S. Department of Commerce, but the technical compliance review is conducted by the NSA — hence the key name. "It's safe to assume that we will change the name of that variable," said Culp.

Fernandes, though, disputed Culp's explanation and suggested that Microsoft make public the NSA's review of export requirements that the key supports. ∎
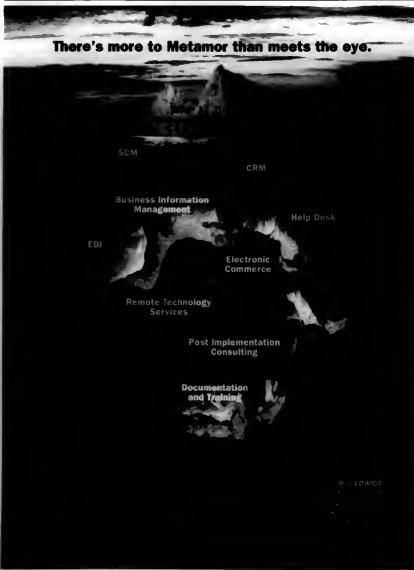
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Linux Quietly Makes Its Way Into Federal Government

Large agencies are eyeing broader uses

PATRICK THIBODEAU
WASHINGTON

Linux is quietly slipping in the back door of the federal government, in the hands of people such as William Oliver, a forensic pathologist and systems administrator at the U.S. Armed Forces Institute of Pathology.

Oliver is using the Linux operating system on workstations for imaging research, and now plans to replace some Windows NT workstations with Linux. The availability of office applications for Linux is making that switch possible.

But Oliver also hopes that by shifting to a relatively homogeneous environment — Unix and the Unix-like Linux — he will reduce systems administration costs.

"I don't have anything against Microsoft, actually," Oliver said. "To me it's almost entirely a matter of system admin overhead."

Linux is making some significant inroads at the federal government, according to federal users who gathered for the first-ever "Linux University" here last week. But it's hard to get a handle on the extent of its use. Linux is arriving stealthlike, because someone loaded it on a workstation or made a relatively small purchase.

Judging from the more than 700 federal information technology employees and systems integrators in attendance, interest is running high. The program was sponsored by Silicon Graphics Inc.

Linux is primarily being used in government research laboratories, while Microsoft Corp.'s Windows operating system dominates the vast federal bureaucracy.

But Przemek Klosowski, a

physicist at the National Institute of Standards and Technology and head of the D.C. Linux Users Group, argued that the government has an obligation to look beyond Windows and consider extensive use of alternative operating systems. "The government should be vendor-neutral," he said.

Large federal contracts often specify certain operating systems, which can make it hard for Linux vendors to get in the door. But those federal agencies are nonetheless eyeing alternatives.

> "I would welcome the ability to have a choice," said Omar Herran, a section chief in the information management division at the U.S. Department of Justice, an agency that has charged Microsoft with antitrust violations.

The Justice Department is a large user of Ottawa-based Corel Corp.'s WordPerfect software, which supports Linux. But Herran said there are several issues to address before the agency could consider deploying Linux, such as having the staff to administer it. But "what I see is encouraging," he said.

JUST THE FACTS
The Linux Stealth

■ Federal use of the **Linux operating system** is primarily limited to research

■ Windows dominates the desktop, but IT officials at large agencies are eyeing its potential for wider deployment

■ The spread of Linux is due to grassroots adoption by IT professionals and researchers

Bye-Bye, Temps?

Internal memos show Microsoft may alter worker policy; company denies it

BY STEWART DECK

ALTHOUGH recent internal Microsoft Corp. memos appear to show that the company is planning to change the way it uses long-term temporary workers, company officials say hiring policies haven't changed.

But according to industry observers, if Microsoft does change the way it employs "perma-temps," that will send a message to the high-tech industry about how to deal with temporary workers.

The memos — copies of which were provided to Seattle-based WashTech, an organization that represents temporary and permanent high-tech employees — appear to show that Microsoft plans to implement "workforce planning" changes. These changes would convert a large number of current positions filled by long-term temporary workers to full-time company jobs. The workers who have filled those positions would be required to interview for them like all other candidates.

Although Microsoft isn't a court case in May over the status of long-term temporary workers (see chart), none of the memos specifically points to that as a reason for any of the proposed changes.

But Dan Leach, a Microsoft spokesman, said the company has neither changed its hiring policies nor has any "new policy to announce." Leach added that in product life cycles, "there's always an ebb and flow of contingent assignments ... and with Windows 2000 nearing its ship date, we expect some positions will shift."

Over the past three years, courts have determined that some long-term contractors are eligible for company retirement benefits and employee stock options. Courts are still working out the details of perma-temps' stock ownership.

Barbara Judd, a business analyst temporary worker with a

two-year contract at Microsoft, said she would welcome the opportunity to interview for a full-time job. "I'm hoping, though, that they won't use this to discriminate against some of us who have been [Communications Workers of America] union activists," Judd said.

"What [Microsoft] is publicly saying appears to be different from what they're doing," said Marcus Courtney, an organizer at WashTech. "They're moving in the right direction, but the way they're treating their contractors as external candidates ... is creating an unfair process," he said.

Barbara Gomolski, an analyst at Edeo Prairie, Minn.-based Gartner Institute, said Microsoft officials would be unlikely to acknowledge any employment policy changes with parts of lawsuits still open. ■

Microsoft Vs. Temps

October 1999 Federal appeals court rules that some Microsoft temps are eligible for Microsoft retirement benefits

July 1991 U.S. District Court rules that workers employed as independent contractors and subsequently forced to work through temporary agencies were common-law employees of Microsoft while working at the company between 1987 and 1990

May 1999 The 9th Circuit Court of Appeals rules some long-term Microsoft workers should be entitled to buy discounted Microsoft stock — Microsoft asks for rehearing

June 1999 Microsoft's appeal for rehearing denied

September 1999 Microsoft memos appear to indicate a shift in temp hiring policies

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Toshiba Unwraps Celeron PC for $549

IT likes price but may need more power

BY MATT HAMBLEN

Toshiba America Information Systems Inc. pushed further into desktop PC territory last week by announcing a low-cost Celeron machine starting at $549. It's a 1-in. Toshiba monitor would add $159 to the machine, which has a 366-MHz processor.

Toshiba, the laptop computer leader, only launched a desk-

top line 18 months ago and has ranked 18th or higher in desktop market share in recent quarters, analysts said.

Celeron-based machines from several vendors have attracted some interest by information technology managers seeking low-cost desktops that might function as thin clients or low-cost upgrades [News, May 3, June 7].

A comparable machine from Dell Computer Corp. in Round Rock, Texas, listed last week at $699, including monitor, for 400-MHz, Pentium II-based machines from Dell and Toshiba, he said. Pentium II is being phased out by Intel

business Research Inc. in Hampton, N.H.

Prashant Cherukuri, director of IS at Technion Communications Corp., a call center service in Fort Lauderdale, Fla., has recently been comparing Toshiba desktops with Dell's to equip 500 PCs to a call center in development.

Cherukuri has received almost matching bids in the $970 range, including monitors, for 400-MHz, Pentium II-based machines from Dell and Toshiba, he said. Pentium II is being phased out by Intel

Corp. but is still available.

Celeron is advertised as a low-cost alternative to Pentium II and III. But during tests, Cherukuri found that when call center agents had several desktop applications running on the Celeron machines, opening another application could take several seconds longer than with the Pentium II machines, he said. "In the call center business, if it takes a couple seconds for an agent to get something, a customer might hang up," he said.

But Cherukuri said the Toshiba sales agent has been more responsive than Dell's agent and has offered to buy back existing machines. ■

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Quelling Public's Y2K Fear a Top Concern

Public and private sectors move to educate, prevent hoarding

PATRICK THIBODEAU
WASHINGTON

EDUCATING the public about the year 2000 problem is becoming a priority for some government agencies and companies, which are worried that panic could trigger massive bank withdrawals and the hoarding of food and prescription drugs.

U.S. Sen. Christopher Dodd (D-Conn.), vice chairman of the Senate Special Committee on the Year 2000 Technology Problem, warned last week that the consequences of public panic may cause more harm than any Y2K computer failure.

"The greatest fear that I have is that you are going to get panic setting in ... those who predict dire consequences," Dodd said.

For corporate information technology managers, public panic could cause supply-chain and inventory problems, as well as overloaded call centers and telephone networks.

Panic "is one of my biggest fears," said Chris Appau, Y2K project manager at Beaverton,

SEN. ROBERT BENNETT: Y2K is "an opportunity to attack."

Ore.-based Providence Health Plan, which has some 670,000 members.

But Appau, who has opened local television and radio talk shows to discuss Y2K, said he's seeing more community awareness projects. Avoiding a panic will take "good, sound communication on what's realistic and what's reasonable," he said.

Giant Food Inc., a Landover, Md.-based chain of 178 grocery stores, is also trying to get the message out that it's ready. The company has printed a brochure for its customers and is planning to run newspaper advertisements and meet with local media representatives and elected officials. "We've been working on this issue since 1996. We're as ready as ever," said Barry Scher, a company spokesman.

But more needs to be done, said Mike Jacob, chief consultant to the California Assembly's Information Technology Committee. Local utilities have spent more than $1 billion filing the problem but haven't spent enough money explain-

ing "why you don't have to go out and buy generators," he said.

California state officials plan to spend some $2 million on public education efforts, according to Jacob.

Companies and government agencies were also warned last week to prepare for attacks

from hackers and terrorists who may try to use Y2K to mask their activities.

"Those who wish us ill will for one reason or another [will use Y2K] as an opportunity to attack," said Sen. Robert Bennett (R-Utah), chairman of the Senate Y2K committee.

Meanwhile, the California State Senate last week approved legislation that, among other things, would allow the state data centers to isolate themselves from other networks on New Year's Eve into New Year's Day to avoid virus infection.

They experienced no problems. "This is a complete nonevent" for Sears, Roebuck and Co., according to Jan Drummond, a spokeswoman at the Hoffman Estates, Ill.-based retailer.

Some organizations that tested against the Sept. 9 date also reported smooth sailing. "We've been conducting tests in our global operations centers in the Far East and Europe and have no problems to report," said John Burns, vice president of projects at Canadian Imperial Bank of Commerce in Toronto.

HP Inks E-Services Deals

Builds on effort to be one-stop Net shop

BY JANUSARY VIJAYAN
SHAH

Hewlett-Packard Co.'s partnerships with two application service providers, announced last week, build upon the company's recasting of itself as a one-stop provider of Internet infrastructure and services.

As a result of deals with messaging company USA.Net and EOnline Inc., a host service for enterprise resource planning applications, users can expect to see a slew of hosted Internet applications, vertical portal sites and application integration technologies from HP over the next few months, said executives at the E-services World Executive Conference here.

Under the deal with Colorado Springs-based USA.Net, for instance, HP will make

USA.Net's commercial e-mail outsourcing services available. As part of a five-year agreement, HP will invest $25 million in hardware and support services in return for an equity stake and a share of future service revenue from USA.Net.

With the EOnline partnership, another revenue-sharing deal, HP will sell and support remed SAP AG applications like R/3 for small and midsize businesses. EOnline is a Cupertino, Calif.-based provider of hosted SAP applications.
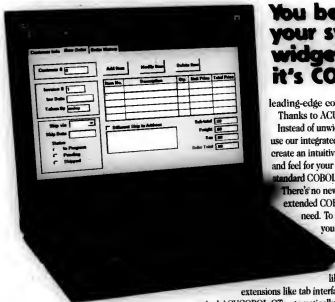
Separately, HP announced a partnership with StarMedia Network Inc., a provider of Net

services to Latin America. As part of the relationship, HP and StarMedia will offer Web hosting services — including storefronts and e-commerce transaction capabilities — to small and midsize businesses in Latin America.

With the deal, those HP's Internet services practice has gelled, said Richard D. Wright, chairman and CEO of Cversion.com in Brentwood, Tenn. an application services provider for health care providers.

"In the last six months, HP has given concise articulation of their strategy. They're right on the money," Wright said.

NEWS

Business Web Sites Adding Careers Info

Job advice, research latest 'sticky' content

BY STEWART DECK

MANAGERS of business Web sites — eager to draw more visitors and keep them on-site longer — are trying a new ploy: They're adding a mother lode of job-hunting information and career advice for browsers to explore.

The Hoover's Online (www. hoovers.com) business research resource operated by Hoover's Inc. in Austin, Texas, will formally unveil its newly revamped site this week with a full-blown careers channel. It will have numerous career content links, including a job bank powered by the extensive Monster.com employment listings, tools for researching potential employers and the inside scoop on what it's like to work for companies (provided by Vault.com Inc.).

The goal is to bring in more visitors and get them to stick around for a while, said Gordon Anderson, editor in chief at Hoover's Online in Austin. "Hoover's has been a single-mission site; people would come here to look up single pieces of information and then leave. Our goal is to turn this into a one-stop shop for job hunters and a top-of-the-mind resource," he said.

Customization

In the next several weeks, Hoover's will let visitors customize news and search para-

meters, so that on return visits, they can quickly see new listings that match their interests.

Career information is one of the most fashionable types of "sticky" content for keeping Web site visitors from surfing away, said Charlene Li, an analyst at Forrester Research Inc. in Cambridge, Mass. "And these aren't just job boards that sites are linking to," Li added. "It's about career management and development and continuing education."

Plenty of other sites have jumped into the careers game lately, including Manpower Inc., Realtor.com, Macmillan Publishing Ltd. and Telezoo.com. ▸

CBS, Viacom

ing" media companies on the Internet, though he didn't disclose how the company expects to get there.

IT leadership also needs to be settled. Viacom Senior Vice President Tom Entland and CBS MIS Vice President John Lalli are now in top spots at their companies. A spokesman for Viacom in New York said it was too early to "talk about IS merger strategies."

Still, it's clear that Viacom and CBS have taken completely different approaches to their Web businesses.

Though CBS has elected to promote its Internet partners such as San Francisco-based MarketWatch.com Inc. and New York-based Medscape Inc. (www.medscape.com) in exchange for equity stakes in those companies, Viacom has instead "bought out partners outright," said Aram Sinnreich, an analyst at Jupiter Communications LLC in New York. Sinnreich pointed to Viacom's acquisition of Englewood, Colorado-based Liberty Media Corp.'s music sites, which it has since folded into MTV Networks' Web site (www.mtv.com).

Though neither company has done much to link its various sites, the prospect for Viacom (which owns New York-based MTV Networks and Hollywood-based Paramount Pictures Corp.) and CBS to cross-pollinate their marketing efforts "is a big prospect for them going forward," said Michael A. Kapinski, a media

analyst at A.G. Edwards & Sons Inc. in St. Louis.

Sharing customer data and melding data warehousing capabilities presents Viacom and CBS IT staffs with additional challenges and opportunities. Although she said she doesn't foresee any technical hurdles to sharing customer data, Robin Flynn, an analyst at Paul Kagan Associates Inc. in Carmel, Calif., said she believes that there could be some of the typical "limitations" among the types of products that both Viacom's under-24 MTV audience and CBS's older viewers would share an interest in.

Though CBS and Viacom may generate cost savings by consolidating some redundant corporate operations — such as accounting and general ledger activities — their respective business units will most likely be run au-

tonomously with stand-alone information systems, said Art Bassin, president and CEO of TV Data Technologies LP, a Glens Falls, N.Y.-based provider of television programming information to newspapers, syndicators and ratings agencies.

And though Kapinski said he is bullish on the deal in the long term, he said the companies may face "some short-term execution risks," including a strong likelihood that the Federal Communications Commission will require Viacom to sell off some TV stations. Stations owned by a combined Viacom-CBS would reach roughly 41% of the U.S. market, while federal law limits that to 35%. Stations from owning stations that reach more than 35%.

If Viacom decided to sell properties in markets where it would have overlapping stations, such as Boston, Philadelphia and Miami, it could create some headaches for its IT staff. The efficiencies that a company like Viacom can achieve in centralizing IT operations among TV stations in different markets "can work to your detriment during a divestiture," said Eileen Birge, an analyst at The Concours Group, an

IT management consultancy in Kingwood, Texas.

Plus, divestitures in general "can be a drain on your IT staff," said Birge, especially when the seller agrees to provide IT services to the unit being sold for a transitional period.

That can be distracting to IT employees who are busy trying to integrate the newly acquired organization, in addition to providing services to a business unit "that no longer matters to them," said Birge.

Meanwhile, CIOs must also concern themselves with how a divestiture will affect existing software and hardware licenses that are frequently priced based on monthly usage, said John Santos, an analyst at Meta Group Inc. in Frankfort. ▸

Hotel Merger

lion annually by combining operations, including IT functions, officials said.

"They'll be trying to move to one integrated [technology] platform that makes reservation cross-selling and data capturing easier," said Tom Storey, executive vice president of strategic planning at Promus in Memphis.

Storey said Hilton and Promus both use central reservation software called RezSolutions from Phoenix-based Anasazi Inc. Each company then builds its own applica-

tions on top of the software to suit its needs.

Reservation systems are typically connected to property management systems that monitor each hotel's bookings, as well as group sales, catering and credit-card settlements, Hilton, in Beverly Hills, Calif., uses a homegrown property management system called HPMS, a Hilton spokeswoman said, whereas Promus has connected its reservation system to a homegrown, Windows-based application called System 21.

Nearly 80% of Promus hotels use System 21, and the rest will go live in the first quarter of 2000. "That's unlikely to change," Storey said.

But consolidation of data

centers and transaction-processing functions is on the horizon, Storey said. There will also be consolidation of enterprise resource planning systems for human resources and finance. Hilton uses PeopleSoft Inc. applications for finance and human resources while Promus uses applications from Infinium Software Inc. in Hyannis, Mass.

Officials wouldn't comment on whether IT jobs would be lost, but industry observers said layoffs are likely.

"As they centralize their reservation systems, you only need one central technology group, so there's inevitably a lot of layoffs," said Larry Chervenak, president at Chervenak,

Keane & Associates, a hotel technology consulting firm in New York.

Chervenak said his firm received dozens of résumés from Promus and Hilton IT staffers just before the merger announcement.

Though the road may be paved for merging the systems, observers are split on exactly how long it will take. "It should take no longer than three to four months for the integration of the programs," said Les Spielman, an analyst at Hospitality Automation Consultants Ltd. in Valley Village, Calif.

"It's probably going to be closer to two years before they get the full benefits [of integration]," Chervenak said. ▸

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Forget Dilbert; Today, I'm Dr. Megavolt

Burning Man arts festival gives techies a chance to spoof, and test, new technology

BY ANN HARRISON

IN HER DAY JOB, Lissa Shoun is a Web page designer from San Jose. But at the Burning Man festival during the week before Labor Day, she ran an airstrip serving the more than 23,000 artists, pyrotechnic enthusiasts and technological visionaries who gathered in the desert 120 miles north of Reno, Nev.

Shoun, who last year helped design the festival's Web site (*www.burningman.com*), this year ran a 5,000-ft. airstrip used by more than 40 planes that came from as far away as Denver.

Flying in on her own Grumman Tiger, Shoun spent most of the week fielding airport radio traffic and conducting aerial tours for filmmakers and photographers seeking shots of the encampment, known as Black Rock City.

The city, composed of theme camps, was constructed to resemble a giant clock in a 2-mile arc around the Burning Man sculpture, which was located at the center of the camp's Wheel of Time.

"There are a lot of patterns visible from the air that are not immediately obvious from the ground, and there is a lot of high-tech stuff from San Francisco," said Shoun, one of many Burning Man participants who use technical skills from their jobs in the computer industry to help create this annual desert art camp.

Among the art creations was a mobile Tesla coil that emit-

ted large bolts of purple lightning and featured a performer who called himself Dr. Megavolt. Another nightly event featured "Illumination of the Tetrahedron," a 3-D light sculpture composed of green lasers that swept the desert in 10-mile beams. Atop one of many recreational vehicles scattered among the art camps, laser operator Alex Selemenev leaned down and casually lit a cigarette off one of the 5W solid-state lasers.

Flamboyant space-age costuming, body painting and casual nudity were abundant on the playa, as was a fleet of high-

BURNING MAN '99 featured a lot of electroluminescent wire and mysterious glowing sculptures

ly decorated art cars. A full-scale opera production by Pepe Ozan of San Francisco featured a towering fire linguam set that was later torched. Saturday night, the crowd gathered to witness the stirring climax of the event, the burning of the 52-ft.-tall sculpture of a man, which was preceded by a succession of daring fire dancers.

Elsewhere oo the desert sand, curious campers gathered around a fiery automated tetherball sculpture called "The Chaotic," created by computer pioneer Larry Breed. Another popular sculpture featured the bow and conning tower of a full-size submarine. An Atari camp shipped in several of the machines popular among enthusiasts of classic computer games.

Among the many pyrotechnic displays were fire-breathing robot monsters created by San Francisco-based Survival Research Laboratories and the Seemen robot/kinetic art collaborative, which burned down mock-up commercial buildings to the delight of the crowd.

One tongue-in-cheek entrepreneur, who called himself Rico Thunder (and who in real life is a Web site manager for an Internet start-up in Santa Cruz, Calif.), created a theme camp called the Costco Soulmate Trading Outlet.

The camp, which had oo connection to the company of similar name, encouraged visitors to have their pictures taken and to fill out application forms created on the camp's PC. The applications were matched for compatibility, and more than 3,000 participants were directed to someone who could be Mr. or Ms. Right.

Thunder insisted the service was effective and said he

NEWS

knows of one couple introduced last year that still corresponds every day via e-mail. Although he had no interest in logging on during festivities, he said he had taken steps to block inquiries from the real Costco Wholesale Corp., a Kirkland, Wash.-based retailer that had sought to shut his site down. "Trying to control the Internet is like herding cats," Thunder said. "We are well protected by parody."

Lounging in their theme camp, the staff of the *Black Rock Gazette*, an 11,000-circulation daily newspaper published at the camp, took a rest from documenting the spectacle.

"The use of the Internet is integral to Burning Man," noted newspaper staffer Zac Bolan, a Canadian from Calgary, Alberta, who created a rink where his compatriots played desert hockey on the dry, cracked earth. "We are a digital community. We are ethereal 52 weeks of the year."

Vicki Olds, publisher of the *Gazette* and owner of Reflex Graphics in San Francisco, finished her martini and gave credit to her information technology staff, who set up the four 24-hour text entry PCs and 17-in. layout monitors to publish the paper, which was sent via satellite uplink to a Kinko's in Reno for printing.

"These guys are great. They are the New Age cyber range riders," said Olds. ❧

THIS YEAR'S MAN didn't simply burn, but exploded with a full complement of fireworks and bottle rockets.

L2K MAGIC BY 'THE WIZARD'

The L2K sculpture, a 500-ft.-wide circle of lights, flashed in mysterious patterns around The Man. Created by The "The Wizard" Black, its 2,000 LEDs were assembled by a group from Silicon Valley. The lights were wired into a harness with eight golf-cart batteries and 200 microprocessors designed by Black. Another 200 circuit boards were arranged around the Pattern Buffer Lounge camp, one of hundreds of Burning Man "theme camps." The boards flashed in sync with the circle of lights. Attendees could influence the light patterns around The Man by hitting buttons mounted on the boards. One of the Burning Man radio stations, WL2K, synchronized the pattern of lights around The Man with music. "Here we have used the technology that might be used for 200 telephones to redefine the entire physical space," Black told the *Black Rock Gazette*, one of Burning Man's two daily newspapers.

Desert Art Camp Tests New Internet Link

Besides nudists, lasers and fire dancers, the Burning Man Festival boasted the first trial-by-fire of a two-way satellite Internet link that could revolutionize how some businesses connect to the Internet.

Despite the remote location, revelers at the site, known as Black Rock City, were able to communicate with the rest of the world, thanks to a T1 satellite Internet connection provided by San Diego start-up Tachyon Inc. (www.tachyon.net).

Tachyon, which was founded in 1997, dispatched an RV full of technicians to the festival, where they set up an Internet link using a two-way satellite system called a Tachyon Access Point. The signal is beamed to an orbiting geosynchronous satellite and then back down to a gateway site at the company's headquarters. From there it is shot over to Concentric Network Corp., a San Jose-based tier one Internet service provider.

The Tachyon system's advantage is that it sends signals directly from the user site to the satellite via an on-site dish, whereas other systems are hybrid consumer-targeted operations where information is received from the satellite but goes out via landlines.

Tachyon sales engineer Gary Echo said satellite links are a more convenient and faster way for new businesses to establish Internet connectivity. "It can be four to five months to get a landline installed, and some businesses can't wait four to five months for the slow grind of the phone company to install them," said Echo.

He said the company, which received $30 million in venture capital funding in January, will formally launch its satellite connectivity product next month, targeting toptier Internet service providers. Tachyon will market exclusively to Internet providers in Europe and North America and expand worldwide by the end of 2001, Echo explained.

The cost of connection time will depend on bandwidth and the Internet provider's pricing structure, Echo said. But many Internet providers are eager to expand their services to offer satellite connectivity, said Mike Liebhold, senior vice president of business development at Tachyon.

According to Echo, the Burning Man installation presented a fine opportunity to test the system in a demanding environment.

It was, in fact, the first broadband video-satellite uplink using the system, Echo's team, together with volunteer engineers John Gilmore and Clif Cox, set up a wireless Ethernet connection at Black Rock City to link the site with ITVnet Inc., a Webcasting company based in Los Angeles. The broadband video required special configuration for IP mapping to bring remote ITV in connection with their servers.

The link also provided connectivity for the *Black Rock Gazette*, a daily paper published at Black Rock City. The wireless LAN also connected several theme camps where participants could collect their e-mail.

William Mutual, president and chairman of ITVnet, said the company produced video vignettes for its Web site (www.itv.net) and broadcast live from the desert.

ITVnet, has "provided live Webcasts from the top of the Himalayas to the bottom of the ocean and have been searching for a remote high-bandwidth delivery mechanism," said Mutual. "This is a transport mechanism we plan to use on a regular basis."

– Sari Harrison

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Tools Boost Company's Sales Productivity More Than 20%

BY MATT HAMBLEN

Sales force automation tools sometimes cause problems because sales agents don't like managers to force tools and procedures on them that take time away from selling and earning their sales commissions, according to analysts.

But at Mentor Graphics Corp., a software tools developer in Wilsonville, Ore., widespread deployment of a sales methodology combined with automation tools resulted in more than a 20% increase in sales productivity, Mentor officials said.

Since 1996, Mentor Graphics has used the Target Account Selling method from OnTarget Inc. in Atlanta combined with Siebel Sales Enterprise from Siebel Systems Inc. in San Jose, Calif. Mentor has spent $1 million on the two products since 1997.

Last month, OnTarget and Siebel announced a formal alliance of the two products for sale to businesses worldwide.

Mentor has nearly all its employees into the system, including engineers who are building software products, to create a team that analyzes potential contracts to make predictions about the outcome, according to Steven Blum, vice president of the Americas at Mentor.

Team Spirit

That team approach requires salespeople to share goals with others and hear feedback that they otherwise wouldn't have, which isn't always an easy proposition, Blum said.

For sales force automation to work, "you have to have a strong buy-in from salespeople and a buy-in from managers constantly reminding them of the value," he added.

Mentor used Siebel's tools to automate the OnTarget method in 1996. An internal study last year found that the combined system was lowering the cost of sales, increasing the success rate when salespeople pitched new accounts and lessening the sales cycle time, Mentor officials said.

Blum said there was initial resistance by ego-centered salespeople, as well as some early problems in getting various versions of OnTarget available for the Siebel tools.

The Siebel-OnTarget partnership indicates a trend in sales force automation toward finding ways to "not just automate the sales process, but to make the salesman's job easier," said Christopher Fletcher, an analyst at Aberdeen Group Inc. in Boston.

Sales force automation is moving toward "sales effectiveness systems," where pricing and configurations of products are combined with information about potential customers, Fletcher said. ▶

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BRIEFS

Ingram Micro Warns On Sales, Seeks CEO

Wholesale systems distributor Ingram Micro Inc. last week said its third-quarter earnings will be lower than expected and that it is looking for a new CEO. The Santa Ana, Calif.-based company said revenue for the quarter will be between $75 million and $93 million, down from $100 million for the same quarter last year. Jerre Stead, CEO and chairman since 1996, will keep his chairman's post but step aside from CEO duties when a successor is named.

American Express Unveils Online Card

American Express Co. said it will release a version of its credit card specially designed for shopping online. The card creates a smart chip to provide security in Internet-based transactions and will have a magnetic stripe for point-of-sale transactions. The company in November plans to offer an online wallet at its Web site.

HP Settles Suit

Micro Solutions Inc. has settled its patent infringement lawsuit against Hewlett-Packard Co. over storage design. HP acknowledged infringing on Micro Solutions' patents for parallel-port-attached mass storage devices, such as CD-ROM drives, according to attorneys for Micro Solutions in DeKalb, Ill. A statement from HP said the company settled rather than engage in lengthy litigation.

Short Takes

E-commerce services vendor **CON-CENTRIC NETWORK CORP.** in San Jose said it would acquire **INTER-NET TECHNOLOGY GROUP PLC.**, a London-based Internet access provider for European businesses, for $215 million. . . . Citing savings from its Internet sales, **DELL COMPUTER CORP.** cut prices on its line of OptiPlex business PCs by up to 9.7% last week. . . . Internet services provider **PRODIGY COMMUNICATIONS CORP.** said it will buy **BIZBUYER.NET**, a small-business Web-hosting company, for $100 million in stock and cash.

Intel Adds to Its Portfolio Of Network Products

Chip maker announces switch, routers; continues diversification

BY MATT HAMBLEN

INTEL CORP. last week announced three new networking products for midsize businesses that will help round out its switch and router portfolio as it moves beyond its reputation as a chip maker.

Intel has sold network gear for several years but last year took a big step by purchasing remote access provider Shiva Corp. In April, Intel further tried to diversify by entering the Web outsourcing arena to host, manage and store Web content [News, April 26].

The new switch and two new routers are specifically intended for workgroups in midsize businesses — a sweet spot in the overall market, which is dominated by San Jose-based Cisco Systems Inc. and several larger players, analysts said.

Intel grabbed only about 7% of the second quarter's $3.5 bil-

lion in global revenue for switches, ranking it sixth among switch vendors, according to International Data Corp. (IDC) in Framingham, Mass.

However, the switch market is so huge and growing so quickly that earning even 7% of the revenue is important, said Esmeralda Silva, an analyst at IDC. The new Intel 6000 Series switch "is a nice product for Intel and rounds out their solution for businesses," she said.

This is the first switch Intel has offered for the data center; it features several times the number of ports that the company's existing products have, with room for 32 Gigabit Ethernet or 96 Fast Ethernet ports. At $8,400, the switch will cost about 20% less than what Cisco charges and is Intel's first chassis-mounted model in that class, Silva said.

Intel isn't showing interest yet in building products for the largest global networks for big companies, an area dominated by Cisco and Nortel Networks in Dallas.

ICM Inc., a networking consultancy in Bellevue, Wash., is buying one of the new Intel routers, the 9520, for internal

use, after having tested and installed it two months ago, said Robb Karcsay, network engineer at ICM.

The new box replaces three Cisco boxes designed to handle Integrated Services Digital Network, Frame-relay and LAN traffic and should reduce some administrative headaches, he said.

"I was really impressed with how easy the Intel box was to configure," Karcsay said. "The software on the Cisco boxes was so complicated."

He also estimated that at $1,749, the Intel product probably cost him half as much as he might have paid to Cisco or other large vendors.

Paul Strauss, an analyst at IDC, said he believes Intel's new routers are attractive products but adds that it "remains to be seen" whether Intel can grab market share from the leading router vendors, led by Cisco.

"The Intel name stands for something, and they have enormous distribution capabilities worldwide. But to seize market share is very tough," he said.

Cisco Systems	40%
Nortel	12%
3Com	11%
Cabletron	7%
Fore Systems	4%
Hewlett-Packard	4%
Xylan/Packet Engines	3%
Lucent Technologies	2%
Intel	7%
Others	6%
Total revenue: $3.5B	

Dell to Acquire ConvergeNet

Gains storage-area net technology in a $340M deal

BY JACK MCCARTHY
SAN FRANCISCO

Dell Computer Corp. in a bid to boost its network-attached storage offerings, last week said it would buy privately held ConvergeNet Technologies Inc. in a stock deal worth $340 million.

San Jose-based ConvergeNet offers data storage products and technologies that help corporations build storage-area networks (SAN).

Dell entered the storage market last year when it launched the PowerVault 650F storage subsystem, which offers up to 2T bytes of data storage in one rack. The line was expanded to include a tape library, a RAID con-

troller and network-attached storage products.

In the SAN market, which includes systems that can range in price from $20,000 to millions of dollars, has drawn a crowd — expanding beyond traditional storage behemoths such as IBM and EMC Corp. to include Compaq Computer Corp. and network management vendor Computer Associates International Inc.

Dell plans to use ConvergeNet's SAN technology to allow its PowerVault storage products to connect to Intel-based or RISC-based servers running flavors of Unix, Windows NT, Windows 2000, NetWare or Linux operating systems.

Dell, based in Round Rock, Texas, said the deal should be completed in 60 days. ◆

McCarthy writes for the IDG News Service in San Francisco.

Sun Seeks to Beef Up Sales With Net Consulting Services

Server vendor sees growing need for back-end support

BY STACY COLLETT
NEW YORK

Known for its servers and Java programming language, Sun Microsystems Inc. is moving to grow its Internet-related services business.

Sun is offering its Web architecture expertise through Sun.Com Consulting services, which will help companies set up or expand e-commerce sites quickly.

Officials said Sun.Com Consulting will supply technology

and assistance to systems integrators hired by companies to design and build the back-end systems that support Web sites for both business-to-business and business-to-consumer interactions.

Sun plans to bring together accelerated implementation methods developed by integrators with its own technology architecture to get portals up and running quickly, said Mark Baubaus, vice president at Sun.Com Consulting.

The Sun.Com practice puts a new face on Sun's existing services unit, which grew in fiscal 1999 to $1.6 billion in revenue, a 45% hike over the previous year. ◆

We know a service provider that sends

50 megabyte multimedia files around the world.

In seconds

Sorry fellas

londonparistokyo

MARYFRAN JOHNSON

'The Power of Now'

ENCOURAGE your prima donnas. Quit worrying about long-term strategic plans. Wake up to the mediocrity of the team-player mentality. Oh, and send the CEO out to talk to your unhappiest customers. Those are a few of the snappy, provocative ideas in Vivek Ranadive's new book, *The Power of Now*, which champions the creation of "event-driven" companies that recognize and respond to real-time information about customers,

markets and business opportunities. Ranadive is the founder and CEO of Tibco Software, a Palo Alto, Calif.-based maker of real-time software used by companies such as Bechtel, Cisco Systems, Nasdaq, Yahoo and Goldman Sachs. These companies show up in his book as real-world testimonials to customer-centric thinking based on real-time information — distributed Internet-style.

I confess I have more than a passing interest in this book. *The Power of Now* is the first in *Computerworld*'s Books for IT Leaders series, our publishing venture with Computing McGraw-Hill, a division of The McGraw-Hill Cos. It's also the first title to join our new Books for IT Leaders page on www.computerworld.com, where you can peruse the chapters and then purchase it. (Just click on the Resource Center tab on our home page and follow the links.)

Many business book writers these days

discuss technology in vague, reverential tones with liberal sprinklings of clichés about competitive advantage. But not this guy. Ranadive dives into actual specifics about IT infrastructure, discussing middleware and multicasting in terms that businesspeople and nontechies can learn from and appreciate. He argues — very convincingly — that it's far better to innovate and fail than stick with the "mediocre status quo." He trashes the whole client/server database-driven approach to computing and derides the "deceptive, lazy comfort" of closed systems such as proprietary supply chains and electronic data exchange systems.

"Value thrives in open systems like the Internet," Ranadive insists. If he's right, then every company has a good chance of leveraging today's technology for its own kind of customer-centric thinking. ◼

PETER SQUIER

America needs a tax credit for IT training

WHAT REPRESENTS more than 50% of all new capital asset purchases? What has restored America as the undisputed economic powerhouse of the world? What sector has led the longest bull run in our stock market's history? What industry has a negative rate of unemployment?

You know the answer. The U.S. can't get enough of information technology. Nearly every company lists IT as one of its highest priorities *and* one of its biggest headaches.

The reason is always the same: finding people who can make IT happen.

How do we fix the problem? By getting smarter and more skilled people — and I don't mean by importing them from another country. We must make a constant, deliberate effort to train IT professionals. We must aggressively teach them the skills they need if we're to realize a return on our IT investment.

Why aren't we doing enough training? Because it's too darned expensive in terms of money and time. How many companies can afford to spend thousands of dollars per year per employee on authorized, certified training? The economic burden is particularly hard on the smaller and midsize U.S. companies that are really fueling our economic growth. We end up skimping — neither providing enough training to those we train nor training enough people. Those we would take training seriously people. Then we wonder why our systems aren't working well and why those we train leave for greener pastures.

The answer is to offer a corporate tax credit of 20% or 25% on the first $6,000 of each employee's annual IT training. That's the idea behind Senate Bill 456 and House Bill 858. These bills have gathered bipartisan support from more than 40 co-sponsors. Just last week, Vice President Al Gore adopted this tax credit as part of his presidential platform, citing the need to prepare America for the "innovation age."

The IT training tax credit has strong support

BUS ISN'T WHAT
IT LOOKED LIKE
IN THE BROCHURE.

COMPAQ
CRUISES

W.P.

Aberdeen Group

Convergence and
Customer Relationship Management

GENCE

Customer Relationship Management

By
Bill Hills
Aberdeen
Group

Three Convergences

The convergence of carrier and enterprise voice and data networks is clearly an extremely important development. How important is it, however, from the perspective of customer relationship management (CRM)? At the level of the enterprise call center, a cornerstone of any CRM infrastructure, it looks as if voice/data convergence will happen fairly gradually, and over the medium term. There is simply too much legacy investment in circuit-switched systems. For the near term, most customer communications will come to organizations by way of circuit-switched calls and fax. There will be some "green field" situations, where large organizations set up segregated packet-switched call centers and branch offices, or where start-ups begin with converged voice/data networks. Yet the norm in the enterprise will probably be a gradual shift to the new technology over the medium term, blending the new switches into existing legacy circuit-switched networks. This shift is very important, but it will not happen overnight.

For customer relationship management, there are two other convergences that are of more immediate importance. These can be called customer communications convergence and customer information convergence. Each of these convergences is being forced upon organizations because of two revolutions in two areas: communications and e-business. In the following white paper, we will look briefly at each of these two convergences, and consider their impact on the ways organizations manage customers.

Convergence of Customer Communications Streams

From the customer side, multiple communications channels and devices are pervading the enterprise. Customers are increasingly using e-mail and Web forms in their dealings with companies. They tend to do this now via Web sites, using desktop PCs, but they will increasingly do so from mobile data devices as well. They will also increasingly use mobile phones, with separate phone numbers, for public switched telephone network (PSTN)-based communications.

This use of multiple communications channels and devices puts organizations receiving these communications in the position of having to re-converge them into a single information stream. For CRM, solving the problem of converging customer communications channels may well be the most pressing convergence in the near term.

Presently, there is little converging of the different ways customers communicate with organizations. Enterprises can receive customer communications via e-mail and Web forms, but they rarely can converge these separate communications streams together with PSTN-based calls and faxes, let alone treat them as a single stream of information upon which they can act (Figure 1).

This scenario runs counter to customer expectations. Customers are now coming to expect e-mails, voice messages, cell phone-based short text messages, and faxes to be just as valuable as a telephone call to the call center. The fact that some messages are shorter, and may come in store-and-forward form, doesn't make them any less important in the eyes of customer. In personal communications, we now expect the e-mail, faxes, voice mail, and phone calls to be of equal value, and to be cumulative in effect. We expect our friends and family to have received our voice mails and e-mails, and to have processed this information together with whatever we've discussed in real-time communication over the phone or face-to-face.

CRM Suppliers and Customer Communications Convergence

Suppliers of CRM applications, computer telephony applications, and voice switch products have all become acutely aware of the customer communications convergence problem. It is one of the central problems raised by the emerging e-business infrastructure. It is e-business that has raised e-mail and Web form fill-ins to the level of mission-critical customer communications. In an e-business world, even if most customer interactions happen via PSTN telephone calls and faxes, new media is becoming increasingly popular.

The traditional computer telephony and voice switch suppliers in particular are being increasingly drawn into the CRM market. To one degree or another, companies such as Aspect, Genesys, Lucent, and Nortel Networks are all positioning themselves as CRM suppliers. They use the term CRM to refer to many of their customer contact center offerings which were previously named in terms of computer-telephony. It turns out that they have a very important role to play in solving the problem of converging customer communications channels in an e-business age. They will be providing much of the technology and applications needed to converge the separate communications channels.

There are also the more specialized suppliers of applications that manage new customer interaction channels. Suppliers of e-mail management applications, customer self-service applications, Web collaboration applications, and personalization applications all have roles to play in CRM. Their systems must in turn be integrated with both the systems of the switch and CTI suppliers, and of course those of the front-office and back-office suppliers whose applications were once exclusively called CRM applications.

Convergence of Customer Information Systems

As already mentioned, it is rare for organizations to be able to converge customer communications into a single stream, and rarer still to act on them. The dotted lines and unshaded portions of Figure 1 illustrate the fact that, for most organizations, these are capabilities yet to be

THE Aspect

Customer Relationship Portal:

Facilitating True Convergence of Customer Contacts.

This story was written by David Puglia, vice president, product marketing, of Aspect Telecommunications. The story was supplied by Aspect and has no connection to the rest of this supplement written by Bill Hills of the Aberdeen Group.

The convergence of voice and data networks presents a significant problem for many companies and their contact centers: How do you maintain your investment in equipment, staffing and training while satisfying customer demand for mixed-media contacts? In addition, how do you enhance your customer relationship management (CRM) strategy by using the knowledge gained from these mixed-media inputs to maintain, expand, and strengthen customer relationships?

Consistent interactions

The Aspect® Customer Relationship Portal provides the solution to both challenges. The Aspect Customer Relationship Portal is a virtual place where customers can be matched with enterprise resources regardless of the medium of contact: telephone, fax, e-mail, or Web. Because the portal utilizes an open architecture that meets voice and data standards, it allows you to leverage your existing IT infrastructure. But more than that, it allows you to implement an effective CRM strategy that is consistent across all media.

The Aspect Customer Relationship Portal allows you to:

- Blend telephone calls, e-mail, fax, and Web contacts together to provide consistent customer interaction for all types of contacts

- Integrate key elements of your CRM solution-front-office and back-office applications, ACDs, IVRs and databases-into a seamless system

- Combine and utilize the information collected from multiple

resources to enhance business functions such as sales and marketing, as well as customer service, and create a coherent process for managing profitable customer relationships.

The Foundation of CRM

The Aspect Customer Relationship Portal is a software application that gives your customers a consistent experience whether they contact you by telephone, fax, e-mail, or the Web. That is why Aspect refers to the portal as "the foundation of an effective CRM strategy." Without the intelligent, business rules-driven routing and queuing that it provides, and without its ability to handle all contact media according to those business rules, truly successful CRM can never be fully leveraged. Because of that, the Aspect Customer Relationship Portal is vital to a company's ability to fully realize the benefits of CRM.

Customer Relationships in an E-Business Environment

The promise of the Internet as a medium of commerce is enormous. But there are significant hurdles to

be overcome before that promise is fulfilled. Chief among the obstacles to success is the difficulty in providing customer service and support over the Internet.

Consider this:

"67% of online purchases are never completed, largely because top e-commerce sites have made few provisions for real-time, online customer service and support."

—USA Today, Money, June 1, 1999

Amazing. Over two-thirds of potential sales on the Web are lost because of a lack of customer service.

Here is where the Aspect Customer Relationship Portal can make a difference. Essential information like case histories, account balances, and product configurations can appear on an agent's screen at the same time the customer makes contact, every time, no matter what media the customer uses.

This allows the agent to provide more consistent service, more efficiently. Customers feel that your company knows them individually and understands their unique needs. And agents have access to information about your products and sales campaigns, enhancing their ability to cross-sell and up-sell.

Provide Consistent Service in Mixed-Media

Through its media blending option, the Aspect Customer Relationship Portal enables your con-

tact center to accept mixed-media contacts and queue and route them together according to criteria set by your business managers to agents who are able to handle all forms of contact. Desktop software enables your agents to productively respond to all contacts. From a single desktop, agents can:

• Communicate with Web customers using text chat, IP telephony or whiteboarding

• Answer e-mail, with options for utilizing EMRS software that lets agents reply using prewritten responses, attach files and Web URLs, and more

• Access front-office and back-office applications via CTI screen-pop

Not only does this provide your customers with the service they demand (regardless of how they choose to contact you) but it allows you to tailor your responses based on business rules. You can prioritize contacts from your best customers, route contacts to the agent best equipped to deal with that particular customer, and make more efficient use of your contact center resources overall.

Why Aspect?

Aspect Telecommunications is uniquely poised to help companies implement customer relationship management strategies. With over fourteen years delivering customer relationship solutions, first in call centers and now

in complex customer contact centers, and 3,500 mission-critical solutions installed worldwide, Aspect is the leader in CRM delivered in a converged environment. Their core competencies—strength in skills-based routing, media blending, and reporting—are exactly those that matter most to CRM. Add to that the Aspect Customer Relationship Portal. It is the one virtual place that connects your customers with the right enterprise resources no matter how customers contact you. Together, the Aspect Customer Relationship Portal and other available Aspect applications provide a total solution to support your CRM strategy.

In the converged world of voice and data, PSTN and IP contacts, you need to offer your customers a consistent contact experience that builds and strengthens the relationship. Aspect has the tools and experience to help you do just that.

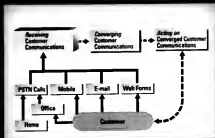*For further information call 888-412-7728 or visit www.aspect.com/cw.*

Figure 1. Receiving, Converging, and Acting On Customer Communications
The shaded boxes and solid lines in this illustration indicate currently available capabilities. The dotted lines and unshaded boxes represent capabilities not yet acquired by most organizations.

acquired. The fact that customer information is scattered across organizations also indicates a deficiency. Thus, bringing all the right customer-relevant information together and applying it to interactions with specific customers is the second form of convergence required by CRM.

The need for this convergence is due in part to the fact that many conventional front- and back-office applications were implemented consecutively and in relative isolation, and were not necessarily designed to communicate with each another. During the past two or three years, however, enterprise organizations have worked hard to solve this problem. Furthermore, there has been significant industry consolidation on the part of front- and back-office suppliers, and this has furthered the cause of customer information convergence. Nevertheless, we are still far from a world in which the CRM systems are sufficiently coordinated with themselves or back-office systems.

There is another significant customer information silo that has recently developed. As organizations have rushed to take part in the e-business revolution, they have treated the Web, at least in initial efforts, as a largely separate, disconnected business entity. The result is that e-business initiatives often create isolated islands of customer information. Interactions with customers whose activities span the e-commerce operation and the traditional call center operation, for example, often become clumsy, or even subject to the "corporate amnesia" effect, in which the customer service representative in the call center is utterly unaware of a customer's interactions via the Web. In effect, the company appears not to know the customer with whom it recently interacted. The task of integrating customer information taken through e-mails and Web forms with that taken through traditional call centers has only

just begun. Until organizations do this, they will appear "forgetful" to their customers, unable to act consistently across all customer input.

At the same time, many of the "dot.com" companies have overlooked the demands of customer service and support. They have spent large sums on transaction processing, fulfillment, and marketing initiatives, but neglected the customer service and support demands generated by e-business. While they automate marketing and sales to an impressive degree, it seems that successful e-commerce initiatives increase rather than decrease customer support and service interactions. With more reachable customers, and more opportunities for each of these customers to interact with the organization, service interactions invariably multiply. To meet the resulting demand for customer service, the dot.coms must develop and integrate automated and conventional CRM systems. They must also , integrate the information these systems generate. After all, e-customers can easily find another company if they receive poor customer service.

Further Needs

Once customer information is more integrated and available, more work remains. Converging communications streams and customer information provides the wherewithal for CRM to be deployed in far more strategic ways. CRM systems still lack two overarching functions. The first is a business rules engine that brings the converged information to bear on each customer interaction just before it happens, as it happens, and after it happens. It would act in a way similar to service control points in the intelligent network of the public switched telephone network (PSTN), or to directory services on a data network.

What's needed is a master customer relationship management nerve center that continually manages and applies company-defined rules for applying resources to customer interactions. The goal should be for every customer interaction over any customer interaction channel to be treated according to all the business policies relevant to that particular customer. Minimally, this requires a business rules engine that spans a company's entire CRM operation, including converged communications channels, customer information, applications, and business functions. For such a business rules and workflow engine to act truly as a nerve center, it must be easily modifiable by personnel closest to the various processes involved.

Finally, in addition to receiving customer communications, integrating the information contained in them, and applying rules governing how individual customers are to be handled, CRM systems must have the intelligence required to analyze and remember what they are doing. They need to have a detailed and evolving knowledge of the organization's interactions with its customers, and the ability to analyze the data preserved in that memory. Analysis results must be provided to personnel responsible for creating and managing the business rules that guide customer interactions. The goal is having this feedback loop make CRM systems adapt better and more quickly to customer and operational needs.

The need for this intelligence is the rationale behind integrating a dedicated decision support system containing a centralized data repository into the CRM infrastructure. Considered by many as a luxury, integrated decision support will likely become a regular feature of enterprise CRM.

CRM Suppliers and Customer Information Convergence

All parties to the broadened CRM market are aware of the customer information convergence problem. And some suppliers are taking a leading role in offering solutions. Aspect Communications, with its Aspect Customer Relationship Management Portal, and Hewlett-Packard, with its Smart Contact and Front Office programs, are especially worthy of note. Notably, neither of these companies is a front-office application supplier per se, although both have partnered extensively with traditional CRM suppliers.

Aspect and HP understand the challenges of CRM in an e-business world, and have developed comprehensive systems that integrate traditional and Web-based CRM applications. They have also provided these systems with the crucial ability to converge customer communications channels and customer information. Moreover, Aspect, offers an integrated data mart with its solution.

The Customer Is King

It is often said that in an e-business world, the customer is king. This is usually a reference to the fact that e-business makes much greater market efficiency possible on the buyer side. If customers don't like what you have to offer, they can fairly easily inspect competing offerings and prices, and go elsewhere. Companies therefore must work harder to retain customers in the e-business world. One of the ways they do this is through better customer service and support.

Better customer service and support depend on converging: A.) communications channels and B.) information about, and relevant to customers. The customer is king, and these days the king does business through multiple communications channels. In his imperious manner, he assumes that companies will quickly understand and satisfy his needs. If not, off with their heads! ◆

NEWSOPINION

from industry. It is supported by the Information Technology Training Association, a plurality of whose members come from corporate IT — companies such as Marriott, Bank of America and GTE. This association has joined more than 30 major IT companies and trade associations to form the Technology Training Tax Credit Coalition (www.techcoalition.com).

One thing is just as certain as the shortage of IT workers: A tax credit will never happen unless we aggressively support this initiative through our local legislators.

America's economic prosperity depends on keeping our IT engine well oiled. Increasingly, the oil is our people. The No. 1 reason people cite for why they don't do more training is they simply can't afford it, and this legislation will make training costs less of an issue. Let's get an IT training tax credit passed and end the skills shortage of our IT professionals.

DAVID MOSCHELLA

Each round of poker could be Bill Gates' last

THUMBING THROUGH a month-old *New Yorker* on a Cape Cod beach, I chanced upon one of the most remarkable paragraphs I have seen in my 20 years of following the IT industry. On page 44 of the Aug. 16 issue, the redoubtable and highly reliable Ken Auletta writes the following:

> *Justice officials argued that Microsoft's power was impregnable because consumers were so dependent on Windows. Gates exclaimed, "You give me any seat at the table" — he mentioned Linux, an upstart operating system, and Java, a computer language created by Sun Microsystems, a Microsoft foe — "and I can blow away Microsoft." If his competitors had half a brain, he was suggesting, Microsoft would be toast.*

Now we can probably all agree that this statement gives new meaning to the word *impolitic* — just imagine how Messrs. Balmer, Maritz et al. might react. But we can never really know whether this was just a regrettable example of executive trash talk, blurted out in a moment of pique, or whether this is something Bill Gates truly believes. Either way, it certainly makes for an interesting intellectual proposition. One that Microsoft's competitors might do well to ponder.

Although at first glance Gates' claim might seem preposterous, the historical evidence actually argues otherwise.

The strategic errors of competitors have been a huge part of the Microsoft story — e.g., IBM's licensing of MS-DOS; Apple's refusal to unbundle its graphical interface software; the petty, self-defeating rivalries within the Unix community; the numerous blunders of Lotus, WordPerfect, Novell and many others.

I have always believed that even Microsoft's all-out assault upon Netscape could have been effectively countered. All Netscape had to do was align itself with a rich technology partner such as IBM, Oracle or Sun so that it could maintain its once-formidable browser market lead, while still matching Microsoft's giveaway pricing and aggressive distribution strategy. Instead, Netscape chose to become an enterprise software firm, alienating the very partners it needed. The results were predictable.

This brings us to today's game, where there are essentially four new players — three betting on software, one on hardware.

The software group includes the entire open-source movement led by Linux; Sun's efforts with Java, Jini and its recently acquired office software

maker, Star Division; and the whole Web services crowd, which includes AOL, Yahoo and many others.

Joining these three are the non-PC, non-Windows hardware vendors with their PDAs, set-top boxes, Web appliances, smart phones and whatever comes next.

If Gates were to cash in his Microsoft chips and decide to play any of these hands, could he really win again? Whose hand would he choose? Conversely, which seat would Scott McNealy really prefer, his or Gates'? Obviously, we will never really know. But we do know that, although long-term planning often seems obsolete in today's fast-moving IT industry, actual company strategy remains as vital as ever.

Industry executives and analysts often mistakenly talk about strategy as if it were some kind of chess match. But in chess, you have just two opponents, each with identical resources, and with luck playing a minimal role. The real world is much more like a poker game, with multiple players trying to make the best of whatever hand fortune has dealt them. In our industry, Bill Gates owns the table until someone proves otherwise. And as they say on TV, if you can do it, it ain't bragging.

READERS' LETTERS

Hell on wheels

I READ with interest the article on Internet connections for cars ["Surf While You Drive," News, Aug. 16]. Frankly, the idea scares the hell out of me. I am already forced to commute with various morons who tear along at 65 to 75 mph while doing one or more of the following: eating breakfast, putting on makeup, shaving, reading a newspaper, talking on a cell phone.

Web surfing is one more distraction we do not need on the roads. And I hope the DOT, FCC or some other government agency has the sense to kill this turkey.

Jim Matthews
Washington, N.J.

Don't forget Apple

I COULDN'T help noticing (with much chagrin) the misrepresentation of information in the article "Too Much, Too Fast" [Technology, Aug. 16]. In discussing the computer industry's

desire to leave legacy equipment behind in favor of newer technologies, you state that Intel and Microsoft are spearheading these plans.

Wasn't Apple Computer the first to introduce a machine that lacks a floppy drive and serial ports? In fact, if I remember correctly, shortly after the introduction of those blue boxes, Computerworld writers called the idea "Steve's Folly" or something along those lines. How quickly we forget.

Kevin McDonald
Henrietta, N.Y.
hammel@frontiernet.net

IT worker shortage a global problem

THE ARTICLE "GOP Eyes Boost in Foreign Workers" [Page 1, Aug. 9] made interesting reading.

As a software professional who has worked in India, England and the U.S., I can understand why American companies are lobbying hard to

increase the H-1B visa cap. It is in their interest to employ a highly qualified workforce in order to remain competitive.

The shortage of qualified and experienced software professionals is not restricted to the U.S. The fact remains that highly qualified foreign professionals are extremely mobile and willing to move to any country where there are better opportunities and work conditions and fewer restrictions, either legal or work-related.

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IT dictator wanna-be would serve users

IT WERE the IT dictator ["If I Ran the IT World," Business Opinion, Aug. 9], there would be a much better balance between conventional IT resources and serving users' (and external customers') needs.

Performance standards and compensation for all IT staff, from the CIO down to the help desk, would be determined by their end users and would be based largely on the extent to which the IT staff helped users meet their own performance standards.

I know there is an urge to standardize everything to reduce maintenance costs and minimize downtime, but when standardization starts to limit innovation and creativity within the ranks of those who produce the product/service that pays everyone's salary, it becomes a liability.

M. Steinke
Canas, Wash.

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Alan E. Alter, columns editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8931; Internet: letters@cw.com. Include an address and phone number for immediate verification.

GROWTH HAPPENS. MANAGE IT.

DELL

JOHN GANTZ

Here's my top 10 list of IT issues; What's yours?

EXPERIMENT TIME. I have to give a speech next month on the top 10 issues driving IT. I'm going to run my list by you, and if you think you've got an issue that's bigger than any of my 10, please e-mail me. I'll send you the final list. Think of this as open sourcing my speech.

My list — not in any particular order:

1. Y2K. 'Nuff said.

2. Easy money. Between 1996 and 1998, high-tech stock valuations grew 16 times faster than revenue. Pretty good. Internet stocks, however, grew more than 50 times faster than revenue. Pretty crazy. This is driving a new wave of mergers and acquisitions, not to mention stealing some of our best and brightest from corporate America.

3. The people shortage. Still a big deal.

4. The rising importance of IT. Everything is mission-critical. New online divisions are being funded by some of the stodgiest companies, and new job titles like VP of interactive services, Internet marketing manager and VP of e-commerce are edging into territory once solely owned by the CIO.

5. The growth of consumer information systems. In 2003, there will be 600 million or so PCs able to access the Internet. But there will also be 300 million handheld Internet appliances, 2 billion consumer devices and 50 million vehicles with the potential to connect to the Internet. The PC is drifting away from the center of our IT universe. In your universe, this will first manifest itself as a lot more devices on your networks, like smart handhelds, for instance. Later it may show up as less attention from vendors as they divert resources to the consumer market.

6. Internet privacy. Need we say more?

7. Internet commerce. More than a trillion dollars in goods and services in 2003, and more than a trillion dollars in corporate investment to Web sites.

8. Disintermediation. Is that your job on the chopping block? No, not for the middleman in business transactions. It's Merrill Lynch launching under and launching an online discount brokerage service. It's the auto industry buying and selling auto parts over the Automotive Network Exchange Web site. It's a third of all U.S. PCs being sold through the direct channel.

Disintermediation is a big deal in every industry, and the business models that IT managers and CIOs have to support will be changing rapidly and radically.

9. New technology. Two examples I like to use are Sun's Jini and Internet 2. The former promises to make wide-area computing as practical as local-area computing. The latter means we'll soon have an Internet geared for commercial transactions and performance needs.

10. Microsoft's behavior. Look where the company is investing its money. In the first six months of this year, Microsoft announced almost $6 billion in investments to support broadband communications, making deals with AT&T, NTL, Qwest Communications and others. It put $700 million into deals with platform companies like Banyan, Nextel Communications and Dialogic. It put almost $600 million into content deals — WebMD and CareerBuilder, for example. Is this the company's exit strategy from its core business?

So think about it. What are the issues you see out there? What do you think is driving the industry?

ALAN F. WESTIN

Personal data for 'freebies' — is this a fair bargain?

ARE CONSUMERS making a Faustian bargain by trading personal information for discounts and Web freebies? While privacy advocates and Web companies debate, consumers have already reached an unusually clear consensus: They don't mind providing private data if the companies follow good privacy policies.

What's at stake is how online privacy choices are structured and the future of e-commerce.

On one side are the computer, Web service and e-commerce companies that see personal data as vital to developing effective and responsive e-commerce. They ask Internet users to provide information about their interests and demographics or to allow data about their site visits to be collected for statistical analysis. In return, Internet users are offered a variety of "freebies" — free e-mail, home pages, product discounts, sweepstakes opportunities or even free PCs. Millions of people have chosen to

participate in these online information-for-rewards programs.

On the other side are some privacy advocates who denounce these programs as a dangerous threat to online privacy. They warn that highly personal profiles could be created by these information-for-benefits programs and that this information could be passed along to other companies or even seized by government investigators.

So just how do people who use the Internet react to this controversy? A national survey of Net users conducted in February that was recently released by Opinion Research Corp. for bi-monthly newsletter I publish, "Privacy & American Business," reveals that privacy advocates are speaking for only 12% of the adult Net user population.

The survey shows that 86% of Net users reject the idea that trading information for benefits constitutes a careless relinquishment of privacy or threatens the creation of a good privacy environment on the Net.

These people feel that trading information for benefits is a fair exchange.

The survey asked respondents whether they felt three specific information uses were fair or unfair to consumers. Nine out of 10 said it's fair to collect information about consumer interests and preferences and use this only for statistical analysis. Eight out of 10 said it's fair for those receiving benefits to accept banner-type ads for products and services on their free PCs or on the Web sites they visit. And six out of 10 said it's fair for people getting a benefit to agree that their e-mail addresses be provided to reputable companies so those companies can send offers that reflect a person's particular interests.

At the same time, we found, as have dozens of other surveys of Net users, that privacy policies *do matter* when individuals are asked to give personal information at Web sites.

A majority of Net users (59%) said they might participate at some time in this kind of Internet program if they were provided a full explanation of how their information would be used. This percentage represents approximately 66 million potential participants.

And, in deciding whether to join such a program, a resounding 82% of adult Net users said having privacy policies would matter. Only 14% said such policies would *not* be important as long as they got the benefit.

But in the larger privacy debates, telling individuals about how their information will be used is only half of the good-practices formula. The other half is providing opt-outs or tailored choices that allow people to accept some uses as fair and decline others they feel are not acceptable.

The message of the P&AB survey to e-commerce and Internet task forces is clear: Internet users are ready to join a key component of the consensual e-marketing model — if business Web sites do it the right way. If sites post and follow good privacy policies, consumers will come, carrying personal information. Violate the promises, and they will leave. ◆

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BUSINESS

FACES OF Y2K

Who are the people shouldering the real work of staving off Y2K disasters? Our photo essay pays homage to some as the countdown continues. » **57**

HIRING TIPS

Hiring the right person means knowing what questions to ask and what not to ask. IT managers share their tips on what those questions are, plus clues that can offer insight into your next job candidate. » **52**

LOOK WITHIN

Non-IT staffers who already work for your company may have the organizational, communication, analytical and creative skills to fill the critical vacancies you have in your IT departments. » **55**

GET PERSONAL

The way things are developing online, e-commerce sites will have to perfect personalization to the point that they serve more as interfaces than supply chains than they do as stores, Peter G. W. Keen predicts. » **48**

SCHWAB ONLINE

Even if it is a Web business, Charles Schwab's e-commerce unit must be a buttoned-down place to work, right? Nope. It's a high-energy Web environment peopled by the same bodypierced, technophilic types you find in Silicon Valley, according to its vice president. » **66**

PATENT PUSH

The U.S. Patent Office is increasing the number of examiners that it has checking Web-based patent claims. The office is looking for people with good technical knowledge who also understand issues surrounding new business models. » **43**

DECENT DATA

Two manufacturers are discovering that moving to ERP from low-tech process planning requires a heavy emphasis on retraining users, many of whom may not realize how important good data is for a company that relies on it to make production plans. » **44**

LICENSE LIMITS

Software licenses often include language that limits the amount of time you can use the product. Joe Auer warns. He recommends requiring vendors to make licenses perpetual and irrevocable even before you decide which vendor to hire. » **68**

QUICKSTUDY

Companies organized as virtual corporations can take many forms. But any way you slice it, the virtuality can cut costs and increase productivity if the IT infrastructure is strong enough to provide good channels of communication. » **64**

HEDGING YOUR CAREER BETS?

COMPUTERWORLD visited with information technology recruiters and found out what the hardest-to-fill jobs are as we head into the next millennium. What are the best bets on where the chips are going to fall? The recruiters say that skills in customer relationship management, project management, database administration, e-commerce architecture and others will garner top dollars and training.

50

BUSINESS E-COMMERCE

States Turn to Outsourcing On Web for Agency Records

Revenue-sharing model in Virginia will fund Web sites for other state agencies

BY PATRICK THIBODEAU

IN VIRGINIA, when a law firm or insurance company needs a motor vehicle record, it gets it via a Web site for $5 or requests it via the telephone or in person for $6.

The difference in price and convenience helps to steer traffic to Virginia's Department of Motor Vehicles' (DMV) Web site. But the sale of motor vehicle records over the Web also generates business for Virginia Interactive LLC in Richmond, which gets $1 of every $5 spent on motor vehicle records purchased on the Web.

Give and Take

Virginia Interactive expects to see more than $3 million annually in revenue from this Web-based system with the DMV next year, after the first year of the project is complete. In exchange, the company is under contract with the state to use the money to provide Web hosting, maintenance and design services for a long list of other state agencies, boards and commissions.

Virginia is one of nine states

that have outsourced Web services in similar revenue-sharing agreements. Virginia Interactive's parent company, the National Information Consortium Inc. (NIC) in Overland Park, Kan., earned about $38 million last year.

Competition

NIC is aiming its services at government, which has a hard time competing with private firms for Web developers but is also under pressure to put records and services online.

But under this revenue-sharing arrangement, the cost of records for end users can rise in some cases.

For instance, when Virginia increased its motor vehicle records charges from $4 to $5, some of the large-volume users, mainly companies that gather information for insurers, complained about the increase, said Karen Chappell, director of information and legislative services at Virginia's DMV.

Moreover, Chappell said the Commonwealth's agreement hasn't reduced the DMV's need for

OUTSOURCING FIRM Virginia Interactive gets $1 from each $5 motor vehicle record obtained through the Virginia Department of Motor Vehicles Web site

records online since the 1970s, prefers to maintain its own Web site. "We don't want to be put in a queue with [Virginia Interactive's] other customers," said Chappell. The state's arrangement will probably offer the most benefit to other Virginia state agencies that were behind in their Web efforts, she added, allowing NIC to maintain control of their sites.

Other states such as Kentucky are outsourcing smaller parts of the Web effort, for instance, Web hosting and electronic payments, while centralizing control of Web development. "We are trying to do the same thing internally, by promoting enterprisewide investment," said Doug Robinson, executive director at Kentucky's Information Management Resources Commission.

Fed Seeks More Examiners for Net Patents

Tech/business skills combo needed to handle onslaught

BY JULIA KING

Responding to a surge in new applications for Internet-related patents, the U.S. Patent and Trademark Office and U.S. Copyright Office has hired nearly a dozen new patent examiners with both computer science and specialized industry expertise.

Despite criticism about its treatment of e-commerce, the Patent Office is also standing behind the 125 or so patents it granted last year for supposedly new ways of doing business on the Internet.

In the past 18 months, the agency has come under fire by critics who claim it's awarding too many new Internet patents for ways of doing business that are neither new nor novel except that they're executed in cyberspace [News, Aug. 23].

But that, according to Patent Office Deputy Director Brigid Quinn, is when good enough to warrant the monopoly protection of a patent, because

patents aren't reserved solely for new inventions, as many people believe.

"Patents are [granted] for improvements, too," Quinn said. Rejecting Internet-related processes such as Priceline.com Inc.'s patent for reverse auctions would be "like saying Henry Ford shouldn't have gotten a patent for the automobile because we already had a horse and buggy with wheels that moved you forward," she said.

Prior Examples

One of the primary criticisms leveled at the Patent Office is its alleged cursory searches of so-called "prior art," or previous inventions and/or research that might invalidate a patent application. To ensure that applications are scrutinized thoroughly from both business and technical standpoints, the Patent Office is recruiting examiners who hold computer science degrees and a second degree or work experience in business disciplines, such as marketing or finance. This year, the Patent Office has hired 11 new examiners to review applications for Internet-related business

Internet Patents On the Rise

Number of Internet-related patents issued:

1991	1998	2000*
2	125	200*

*Projected

methods, which brings the total number of examiners in this area to 39. Another four examiners are due to be hired by year's end.

"The increased filings and the subject matter being addressed is what's driving this," said Joseph Rolla, director of the group.

For example, a patent application for an electronic-billing method might be reviewed by someone with both a computer science degree and a degree or work experience in finance and accounting, Rolla said.

To attract new examiners, who earn from $40,000 to just a little over $100,000 per year at the highest job grade level,

the agency is offering to start new examiners at higher job grade levels than before and to advance them more quickly through the government pay schedule.

The primary weakness is that the [Patent Office] is going through a real big growth spurt, particularly in the examination of computer-related patents," said Mike Smith, who worked as a software patent examiner from 1998 to 1999 and is now a patent attorney in Minneapolis.

Typically, an examiner has four days to read a patent [application], conduct a search and write an initial rejection, Smith said.

In addition to its load of new applications, the Patent Office re-examines about 350 patents per year — many because of disputes about their validity. Kevin Spivak, another former patent examiner now working as a patent attorney in Washington, points to the sheer novelty of Internet technology in general.

"The problem with Internet [patents] is not so much that the Patent Office is] not digging up prior art, but that there's nothing to dig up," Spivak said. "It's a stretch to say they're not doing their job."

SNAPSHOT

eBay	125.5
E'Trade	96.5
Microsoft sites	66.0
Yahoo sites	54.6
ProntoCard	57.2
Amazon.com	55.8
Snap.com	47.3
North Interactive	46.2
Schwab.com	43.9
Excite network	33.7

BUSINESS

Clean ERP Data Poses Challenge for Manufacturer

*Moving to detailed production planning
means teaching workers about careful counts*

BY CRAIG STEDMAN

PREPARING end users for the rigors of working with ERP applications is almost always a challenge. Now imagine that they're starting from scratch, with no real prior systems experience.

That's the position Acushnet Co. is in. Acushnet, a Fairhaven, Mass.-based maker of golf equipment, used a combination of spreadsheets and manual procedures to manage its five manufacturing plants before it began to roll out PeopleSoft Inc.'s enterprise resource planning (ERP) software in June.

"We had no manufacturing system," said Peg Nicholson, Acushnet's CIO. Production and inventory planning were done only "at very broad brushstroke levels," which meant plant-floor workers didn't have to sweat the details when they counted the different types of golf balls being made, she said.

Now the company is starting to use applications from Pleasanton, Calif.-based PeopleSoft to do more serious planning. But if the workers in the plants don't put in accurate data, "the system is going to give [us] garbage results," Nicholson said.

Acushnet's project steering committee realized early on that training the 350 workers who are expected to use the ERP system wouldn't be simple, said Bill Frye, a plant manager who is leading the training effort.

To try to help workers understand the basic workings of an ERP system, the project team created informational posters and written quizzes that featured gift certificates to local stores as a reward for their efforts, Frye said.

Employees also got at least a week's worth of training split into two classes — one on how to use the software, the other on the need to be disciplined so bad data doesn't get into the system and spread throughout the company.

Keeping the Ball Rolling

The ERP software is now running at two Titleist golf ball plants and is scheduled to be turned on at two more sites next month. Acushnet's golf club plant should follow by early next year. Expected benefits include inventory savings and the ability to create production schedules that are more precise and can be changed on the fly.

But instilling the required discipline "has been a real challenge, and it's still a challenge," Frye said.

To plant workers, the amount of balls made during a production run "may seem like just a number," he added. "But it feeds up into this integrated monster that plans our schedules and buys our materials."

At the first two plants, production

supervisors are now going out on the floor to help coach workers on the importance of entering good data into the system, Frye said.

Incentives

Employee bonuses are also being tied to things such as accurate inventories. "You keep hammering the theme in every way you can," Nicholson said. Data accuracy has improved sharply at the two golf ball plants since June, "but it probably won't be exactly where we want it to be for another six months," she added.

Dean Brown, a consultant at Houston-based software training firm D A Consulting Group Inc., said showing end users how quickly inaccurate data can spread through an ERP system should be a prominent part of any training program.

"The ripples are just amazing," Brown said. "In the past, you could isolate mistakes pretty easily because you had time to track them down. Now you don't."

Training Is Key to R/3 Success

Training workers on the intricacies of using an ERP system has also been a big hurdle for Stonepack Inc., a maker of polyethylene packaging materials that finished a U.S. rollout of SAP AG's R/3 applications in March.

Stonepack gave its 80 R/3 end users about 100 hours of training during a three-month period before going live, according to Kirk Wilhelm, the company's SAP project manager.

For the workers, especially a group that had been using a 20-year-old mainframe application, R/3 requires "a different way of thinking" about how to enter orders and run other basic business transactions, he said. "It was a huge learning process."

Further complicating matters was an internal reorganization that tied Stonepack's German parent company together more tightly on a global basis, resulting in more business process changes than the ERP system forced on its own. For example, workers

in the U.S. now have to process shipments to other countries.

The R/3 training was broken into small chunks, such as how to process a customer order, to make it easier to digest.

But Stonepack still has "more garbage-in problems than we'd like to see," Wilhelm said.

To try to improve the accuracy of the information in the ERP system, Stonepack — which is getting consulting help from Siemens Business Services LLC in Burlington, Mass. — plans to build new data-validation rules into its R/3 configuration.

The rules will check for errors on data entry codes, which originally were "left a little looser just so we could get started" with the SAP rollout, Wilhelm said.

It will also mean more training to show users what they can't do anymore, he added.

— *Craig Stedman*
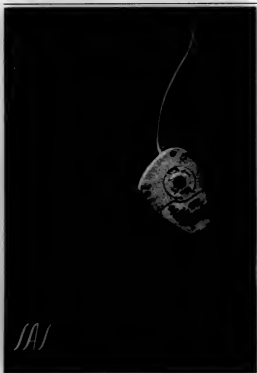
MISSION: Who are "We The People"? And how many of us are there? Two hundred seventy-five million, three thousand and six. Or maybe seven. We won't know for sure until census-takers canvass the nation in the year 2000. It's a job they've been doing since 1790. This time, it will be made easier by a technology system developed by Lockheed Martin.

File   Edit   Insert   Format   Tools   Table   **View**   Window   Help

Client List

Social Security Admin.

EPA

Patent & Trademark Office

Census Bureau

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LOCKHEED MARTIN

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Windows NT

Reliability & the Bottom Line

Robustness, functionality and ease of use are essential to business success

By Philip Kay

In show biz, there is no such thing as downtime. If the juggler is a no-show, the stand-in had better be ready. Because once the curtain goes up, the show must go on.

The same thing is true in IT shops today. If a system crashes, a company had better have a stand-in — or suffer the consequences. What's more, IT's stand-ins have to be ready 24 hours a day, seven days a week, 365 days a year. No one can afford to drop the ball: the explosion of the Internet and, perhaps more importantly, the rise of e-commerce have made sure of that.

Take Web auctioneer eBay Inc., for example. One infamous 22-hour outage cost the company more than $3 million in revenue, wiped billions off its share price, and even worse, caused it to lose business to rival auction sites.

"I call it the over-and-out scenario," says Dave Hill, a senior analyst at Aberdeen Group in Boston. "These days an outage can kill a company, and then it's over and out forever."

So reliability in the enterprise isn't just another sales gimmick. It's a must. And now, even a standard $2,000 Windows NT workstation must be as reliable as a million-dollar mainframe.

There are several ways to approach reliability. Research is forging new technology to make systems run faster and more efficiently. Several companies, including Compaq, IBM, Cisco and Hewlett-Packard, have joined forces to create the new PCI-X standard, also known as "Future I/O," that will more than double the rate at which data travels to and from a server.

Continuously under development are efforts such as Compaq Insight Manager management software. And there is an increasingly important role played by services and support such as those provided by Compaq Services Division.

A commitment to reliability means emphasizing the planning or architecture of the system, according to Tom Iannotti, vice president of Compaq Services Division.

"Compaq Services Division offers the preventative medicine of computing," he says. The organization will take the customer by the hand and assist them in the design and implementation of the system and the training of key system administration staff."

For more keys to reliability, visit **www.WindowsNT-Advantage.com**.

Advantage

The Strategic Information Magazine for IT Leaders

Brent Harman: Ultimate Windows 2000 insider

Brent Harman is Senior Operating Environment Architect for Compaq Information Management. He is also Program Manager for Compaq's Windows 2000 Joint Development Project with Microsoft. In the latter role, he and his team have worked intimately with Microsoft on the development of Windows 2000. At the same time, they have been developing an internal Windows 2000 implementation at Compaq that will be rolled out to some 1,000 users by mid-October. Through the efforts of Harman and his team, Compaq has gained a substantial competitive advantage in the Windows 2000 marketplace.

Windows NT Advantage News Editor Bruce Hoard recently talked with Harman:

NTA: What are the biggest problems you've faced, and how have you overcome them?

Harman: I would say the most significant problem is that Microsoft originally viewed Windows 2000 as an update to NT 4. Compaq didn't view it that way for several reasons. Compaq had its own NT 4 environment, then we acquired Tandem, which had its own NT 4 environment, and then we acquired Digital, which had its own NT 4 environment. There was no way to bring those environments together short of just doing it by hand, one at a time, which was really not an option. So we began to view Windows 2000 not as an upgrade, but as a migration. We began to view it as an opportunity to clean up our NT 4 environment and take advantage of all the things that would be in Windows 2000.

NTA: What are the other larger enterprise companies feel the same way as Compaq?

Harman: Most of them viewed the move to Windows 2000 exactly the same way as Compaq did — as a migration, rather than an upgrade. And I think that was the largest hurdle that we had to overcome because it meant that Microsoft had to go back and rethink a lot of things that they intended to do, because all of their enterprise customers were coming back and saying, "Now wait a second. There is a whole new group of tools that we have to have." I guess we can take the hit for delaying the launch of their product for maybe as much as a year. That's how responsive they've been.

NTA: What are the primary advantages of Windows 2000 over NT?

Harman: I think No. 1 is the concept of directories. Not a lot of people understand why they would want a directory service. Compaq was a user for more than a decade of Banyan Vines, which was one of the early operating systems that had a directory service. So we became early converts of the concept of directories. When Banyan was no longer able to keep up, we made the decision to move to Windows NT, but we have always understood the benefits that come with a directory service. They allow you to have one place where you store user information so you don't have to worry about duplicate names. And you have one place to find objects, one place to manage. As a result, you don't have to spread yourself thin over many domains.

> "We began to view Windows 2000 not as an upgrade, but as a migration."
>
> — Brent Harman, Compaq Information Management

NTA: What other advantages are there?

Harman: It also gives us the opportunity for the first time to require certain behaviors on the network. For example, we have a policy at Compaq that requires any user — whether they are logging on inside the company, or dialing in remotely — to be running real-time virus scanning software. Under NT 4 there was no way to enforce that. With Windows 2000, we will be able to enforce it.

NTA: Are there any other advantages of Windows 2000 over NT?

Harman: The third thing is that we will have much better control over the client machine. The client will be easier to administer. Desktop applications will also be easier. This will drastically reduce our administrative overhead. There is also no question that Windows 2000 is by far the most superior portable operating system today. It is just more reliable, it's more solid, and even though portable users may not always be connected, we have other means to keep them current.

For the full text of this interview, including information on other Windows 2000 beta-test companies, visit **www.WindowsNT-Advantage.com**.

Online This Week

Updating PCs: Staying in control of change in the enterprise

◆ Updating a PC can be a painful task, but Compaq is making it a bit easier. The company is offering a service that helps its customers decide which changes they need and which ones they can let slide.

Read more about change management in the Web Magazine *Windows NT Advantage* at www.WindowsNT-Advantage.com.

Windows NT plays starring role on the silver screen

◆ The power of Windows NT combined with increasingly powerful and cheaper hardware have made NT the choice for more and more post-production multimedia work.

Read more about NT's influence on the movie-making industry in the Web Magazine *Windows NT Advantage* at www.WindowsNT-Advantage.com.

Retaining high-tech workers: What's your strategy for success?

◆ With restless dot-com cowboys itching to head out to the Internet frontier, it's never been harder to maintain a qualified IT staff.

For tips on employee retention, check out the Web Magazine *Windows NT Advantage* at www.WindowsNT-Advantage.com.

Quick poll

Do you support an increase in visas this year to help fill jobs in high tech?

◆ GOP leaders want to up the visa quota this year (from 115,000 to 200,000) to help U.S. companies fill high-tech jobs. The labor shortage is real, but the proposal is controversial — businesses want it; labor groups don't.

Cast your vote now at

www.WindowsNT-Advantage.com

PETER G. W. KEEN

E-commerce: Chapter 2

IN THE FIRST CHAPTER of the e-commerce storybook, the technology largely drove business models. Now the business models are driving technology. Post-2000, this will transform the part of IT organizations that has been least affected by the Internet: business application development.

Chapter 1 of e-commerce exploited three technology enablers: the Web browser, hypertext and Internet Protocol networks. C++ and Java were the base for front-end applications, with application program interfaces (API) linking to back-end databases and processing systems. This gave us the standard storefront and shopping approach to online business. Customers log on to a site, where they interact with a growing range of services.

Very quickly, it became apparent that the keys to all aspects of Internet business are customization, personalization and relationship-building. Prices dropped as customers surfed, and online players began to give away freebies to help build the relationship: e-mail, Internet access, research, news articles and even PCs.

In this context, building repeat business and relationships set the stage for Chapter 2: the move to maximum personalization. This movement begins with "cookies" and continued with giving viewers the ability to customize Web sites. Personalization became the basis of the portal player strategy: Build a relationship brand so customers park at your site to explore the Web, the way shoppers park at a Wal-Mart and then shop the rest of the mall.

The Web storefront surf/shop approach is now moving to a Net market/dynamic agent strategy. The service provider generates offers, scanning the Web to put together deals. Pricing changes from the stated price to the right price for you. There is on-the-fly communication among sites about inventories, status, prices, catalogs and specials. It's like having a personal broker working on your behalf, who contacts you with "Boy, do I have a deal just for you!"

This business model turns the Web into a powerful supply-chain engine. Chapter 2 Web strategies include industry portals that bring together all the players needed to configure and price unique, dynamic offers to customers; consumer portals that are the trusted single contact point for just about anything; and vertical portals, infomediaries and other variants of no-site-is-an-island online business.

So behind the customized front ends to their

Now business models are driving technology.

online business services, Dell's and Schwab's sites interact directly with many others, using software tools, catalogs, APIs and links to legacy systems and databases. Amazon's acquisitions are as likely to be a software company providing software for customization and dynamic offers to customers as they are to be firms that add to Amazon's range of goods.

This business model needs a new generation of technology. The market is responding very fast. In just a few months, the moves to appon-tap and software-on-demand have created the likely next software industry: application software providers. Java has enabled a mass of front-end customization tools, while Jini (basically Java for hardware devices by connecting through IP) makes the most dynamic and interactive personal tools — digital cell phones — part of the IP/Java world.

Such innovations as Hewlett-Packard's Chai, a new Java-based development language, illustrate the shift toward what HP calls "e-speak" applications talking to other applications and brokering services. This style of interactive, dynamic agent is clearly the emerging norm for software targeted at customer relationships.

Most of this new technology leaves me feeling like a goldfish floating in a bowl of alphabet soup. I wash up against acronyms as alien to me as most of standard IT is to business people. What's very clear to me, though, is that the relationship imperatives and customization that underlie Chapter 2 business models are driving all this new technology. In turn, this new technology is the basic tool kit that IT organizations must use to develop business applications once they get through Y2K and all those lengthy ERP implementations. The pace and force of these business model demands are already so strong that they will push the demand for electronic-services technologies even faster.

IT will have to respond. Now, does anyone have a Chai or Jini manual?

THE ONLY THING MORE OVERWHELMING THAN NEW TECHNOLOGY

IS HOW FAST YOU HAVE TO TRAIN PEOPLE ON IT.

For most people, the hardest part of implementing new technology is getting people trained. In fact, according to the American Society of Training and Development, the pace of technological change causes the top three problems in training today.

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JOB SEEKERS'
BEST B

Pondering a new job and salary opportunity? It pays to know which jobs are the hardest to fill. Here's a look at the ones recruiters really struggle with By Deborah Radcliff

RM IS HOT. ERP is not. Web page developers are out. Web architects are in. Keeping abreast of the hottest skills sought by information technology employers isn't easy. That's why *Computerworld* recently spoke with several technical recruiters to determine just which skills are most in demand heading into the next millennium.

To fill these jobs, hiring managers are willing to pay top dollar. They're also willing to sponsor thousands of dollars in continuing education to keep these skills in-house.

Here's a look at what recruiters say are currently the hardest IT jobs to fill:

Customer Relationship Mgmt.

Salary Range: $65,000 (six months' experience) to $125,000 (one-plus years' experience, with project leadership)

"Customer relationship management is about to blow through the roof," says David Cohn, senior staffing specialist at RSA Consulting Services in Englewood, Colo. "The goal is to tie the e-sales and e-marketing applications to the ERP systems we've already implemented."

Customer relationship management (CRM) tools further integrate sales, marketing and customer service organizations to unite resellers, service providers, businesses and customers into a single information system. As a result, technologists experienced in implementing leading CRM products like those from Siebel Systems Inc. in San Mateo, Calif., and Clarify Inc. in San Jose can expect to earn what their enterprise resource planning (ERP) predecessors earned last year, adds Cohn.

How hard are such skills to find? In June, RSA began a search for 10 experienced CRM specialists to staff a new con-

sulting unit. By the middle of last month, the company had hired one and was preparing offers for two more.

"We've done some very creative things to find people who are skilled with CRM implementations," says Rob Quinn, West Coast recruiting director at Management Consulting Services. "We rely heavily on referrals.

We even bring in foreign nationals because these packages are being implemented in Europe and Asia."

Related skills in automated-chain implementation are also hard to find. During the next year, Cohn predicts a strong demand for specialists in software from Manugistics Inc. in Rockville, Md., and I2 Technologies Inc. in Irving, Texas. He says he anticipates an even stronger demand for those who can integrate these packages with other office-automation systems.

E-Commerce Architects

Salary Range: $100,000 to $130,000, depending on experience

Many of today's ERP, supply-chain and CRM management projects cross into e-commerce, calling for an integrated set of Web application development

and integration skills, say technical recruiters.

Most technologists get into e-commerce architecture by means of Web-page developments, then Web-page design. The specific supporting skills they need include C++, Java, JavaScript, Oracle and Perl. Employers are seeking senior-level architectural skills mixed with business savvy.

For the past three months, Phoenix-based IT consulting firm Sprint Paranet has had 20 open positions for e-commerce architects in its western data center alone. Michelle Gorman, recruiter, says she hopes to find project leadership experience that demonstrates the candidate can align technology with strategic business needs.

Java/Object-Oriented Engineers

Salary Range: $85,000 (one to two years' Java development, with C, C++ background) to $150,000 (three-plus years' Java development, with project leadership experience)

Speaking of Java (and most employers are), demand for skills in this area is getting hotter every day. "A good, experienced Java person is hard to find, especially those who can actually say, 'I've got three

BUSINESSCAREERS

ETS

> The candidate had all the right buzzwords, but he also knew enough to explain the business value of his implementations.
>
> **MICHELLE GORMAN,**
> **RECRUITER,**
> **WESTERN DIVISION,**
> **SPRINT PARANET**

years working with Java,'" says John Wagner, senior technical recruiter at Sykes Enterprises Inc., a Raleigh, N.C., call center management outsourcer.

Senior-level Java experts build business applications for telecommunications, engineering and financial-tracking software, Wagner says. But because experience is so hard to find, his company has placed 10 lower-level Java programmers with one year of Java experience and a C backgrounds, while finding only one senior Java developer during the same period.

"Start as a junior programmer, and if you're good, within six months you'll be developing Java applications. For every six months' experience you get in Java, your pay will increase exponentially," Wagner says.

Network and Systems Engineers

Salary Range: $75,000 to $100,000, depending on experience and project management background

Three years' experience is the magic number for hiring managers. This shows you not only know a technology, but you also know how it relates to the business application it serves. Employers are also hurting for network and systems engineers with, yes, three to six years of experience.

But these people are a little easier to find than experienced Java folks. Wagner has placed five systems engineers and seven network engineers in the past six months. These candidates must be skilled in routers, hubs, modems, switches, network design, electrical engineering and software that manage traffic flow.

"Systems and network engineers will continue to be in high demand as long as businesses rely on networks," Wagner says. "We need systems engineers to design, build and maintain networks. We always need people to make them faster, expandable and more reliable."

Network and systems engineers usually start in desktop configuration, then specialize in operating systems, network administration, network management or network redesign and then, with training as a Cisco Certified Networking Associate or Microsoft Certified System Engineer, graduate to the engineering level.

Information Security Specialists

Salary Range: $70,000 to $110,000 (based on SANS Institute System, Network and Security Administration Salary Survey)

Some network administrators move into information security. But not nearly enough, say hiring experts.

"Data security is an awful position to fill," says Monica Belicsky, technical recruiter at $6 billion Altell Corp. in Little Rock, Ark. Over a three-month period starting in May, the telephone software and services company made four offers to fill one asset-protection analyst position. Belicsky found that person, but she had to settle for someone who needed significant training.

Sprint Paranet also finds it extremely frustrating to fill the 40 to 50 Certified Information Security Specialists positions that open up annually.

"We need people who can identify security threats, calculate risk analysis for our clients' current systems and architectures, implement firewalls, intrusion detection and other security technologies," Gorman says. "It takes me the better part of four months to find one of these people."

Database Administrators

Salary Range: $45,000 (entry-level analyst) to $91,000 (senior architects)

Certain flavors of database administrators are also difficult to find. For more than a year, Belicsky searched for an

IBM DB2 administrator. She says she had no luck because most candidates would rather work on Oracle, which involves skills that are much easier to find. In August, she gave up and canceled the position.

"Candidates are not qualified, not interested in IBM or want to work as contractors only," Belicsky says. Most of the work involves database installation, upgrades and application integration. A traditional path to database administration would be through operating system programming.

Client/Server Developers and Architects

Salary Range: $38,500 (entry-level client/server developer analyst) to $84,000 (senior client/server architect)

Employers also find it hard to hire people with that magical three to four years' experience in client/server technology — those C++ whizzes who can tie together relational databases (Oracle, Informix) and Unix operating systems.

Altell relies on a variety of hiring methods — promoting and training internal candidates, college recruiting, job fairs, the Internet, cross-training Cobol programmers to C++ and hiring foreign nationals under the H-1B visa program.

The mixed bag of recruiting efforts seems to be working. Belicsky recently filled an open client/server development position in a month. She has 10 more open positions, to which she's getting some favorable responses. She's even finding some candidates for the higher-level positions.

Project Managers

Salary Range: $80,000 to $140,000, depending on experience and complexity/type of projects worked on

Across the board, hiring managers say finding folks to lead their IT projects — whether it be network architecture, electronic procurement or data warehousing — is, indeed, the most difficult.

"We're very specific about what we need in our project managers — staffing, planning and the ability to deal directly with executive-level management at our client side," says Quinn. "In addition to a true understanding of the specific technology being implemented, we need client management skill, the ability to plan, staff and deal directly with executive-level management at our clients' [level]." ■

Radcliff is a freelance writer in Northern California.

THE ART OF THE
HIRING INTERVIEW

Want to hire the right
person? You've got to ask
the right questions, stop
asking the wrong ones
and watch for clues
By Alan S. Horowitz

A N INFORMATION technology department without good people is no more effective than an Internet connection with severe bandwidth problems — neither will ever live up to its potential.

The gateway to connecting with the people you need is the hiring interview. It's where vital information is revealed and analyzed, and it's an opportunity that is missed only at a high cost to your department.

The interview is more than a careful approach to asking the right questions. An IT manager wants to look for nonverbal cues and aspects of a prospec-

KEN HILL at General Dynamics likes this in-your-face question: "Why aren't you making more money?"

tive hire that may not be immediately apparent. Here's how some IT managers use the interview to their best advantage in screening job candidates:

1. Favorite questions: Steve Brilling says he likes a direct approach. The senior vice president and CIO at Swiss Reinsurance America Corp. in Armonk, N.Y., asks applicants: "Tell me your philosophy; how do you manage people?" For senior-level people, what's important, he says, is how the person approaches people-management issues, not nuts-and-bolts IT experience, "which virtually all senior people have.

Bud Albers, senior director of technology services at St. Louis-based Monsanto Co., will ask things like: "Where do you think the business will be in two years, five years and 10 years? Or, "What will the Web look like from a technical perspective and a business perspective?" He wants to know if potential hires really are thinking about where their profession is going and how they will fit into it.

David Bass says he wants to see how applicants deal with uncomfortable issues. Bass, an IT manager at Time Warner Inc.'s Time Customer Service division in Tampa, Fla., asks applicants to describe projects they have led that resulted in failure. He's looking for an applicant to give a valid reason for the failure or to explain what he could have done to turn the situation around.

"I want them to be able to learn from their mistakes and be more successful in the future," Bass says.

Ken Hill, vice president of IT at General Dynamics Corp.

in Falls Church, Va., says he likes an in-your-face question: "Why aren't you making more money?"

What he wants to find out is whether an applicant will answer with excuses. He says he likes to hear that a person is willing to be paid based on his performance and is therefore willing to take some risk.

2. Questions no longer asked: Albers no longer asks what he calls "obligatory questions" such as, "What are your most proud of?" Applicants "have rote answers for these," he explains.

Jeremy Seligman, vice president and CIO at Frontier Corp. in Rochester, N.Y., says he feels the same way and similarly avoids such questions as, "Tell me about your strengths and weaknesses."

"People are well prepared for this question and generally share a weakness such as 'I work too hard' or 'I'm never satisfied,'" he says. "You never get anything useful out of this kind of question."

Bob Jones, vice president and CIO at Moore Corp., a printing and digital communications company with U.S. headquarters in Lake Forest, Ill., says he used to focus a lot on academics and the applicant's biographical details. Now he just asks for a brief synopsis and usually gets a broad picture of the person in about five minutes.

"If they hit on the high points and finish in a reasonable time, that impresses me," he says.

3. Tip-offs: Nonverbal cues can tip off an interviewer to an applicant's suitability or even how well he might fit

JEREMY SELIGMAN at Frontier Corp. looks for people who are "intellectually curious [and] who have a lifelong commitment to learning"

in at the organization. Bass looks at what he calls the applicant's "presentation," which includes dress, confidence and oral skills.

Confidence in an applicant is important to Alan Cramford, vice president of information systems operations at hospital chain Tenet Healthcare Corp. in Dallas.

"I don't want someone who's a wallflower, who can't articulate their strengths," he explains. "I also don't want someone who's very arrogant. I'm looking for a balance."

Seligman asks what the applicant has read lately. "I'm looking for people who are intellectually curious, who have a lifelong commitment to learning, people who read widely, both fiction and nonfiction," he says.

Eye contact is important, says Honorio Padron, CIO and senior vice president of process engineering at Comm-psych USA Inc. in Dallas.

He says, "If you don't look me in the eye, I have trouble with you, because 'I want people person.'"

Horowitz is a freelance writer in Salt Lake City. Contact him at alan@ahorowitz.com.

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HIRING YOUR
NON-IT WORKERS

When strapped to fill a
critical IT vacancy, the
answer may lie with the
non-IT folks already on
board By Mary Brandel

MARY SCHETTI was home on maternity leave in the fall of 1998 when she got a call from Doug Klein, director of IT, store systems, at Sears, Roebuck and Co. in Hoffman Estates, Ill. At the time, Schetti was a project coordinator in the business operations department at Sears, helping to coordinate the retail giant's point-of-sale activities. Klein asked if she'd like to jump the fence to information technology.

Schetti said yes, and now she is a systems planning consultant for point-of-sale systems.

Since at least the early 1980s, companies have poured into the business ranks to fill IT positions. But just because businesspeople are interested in technology careers doesn't mean they will succeed. They must possess certain aptitudes, such as logic, problem solving and an understanding of methodology and procedure.

How do you find that magic blend? Many IT managers say non-IT people like Schetti tend to possess those qualities.

Operations

Good operations employees are detail-oriented, appreciate procedure and understand complex systems, says Alan Stein, who runs the Learning Institute at UnitedHealth Group in Hartford, Conn.

"Truly, IS is computer systems, so there's some advantage there," Stein says. He helped create a 15-week IT program for new non-IT hires at current UnitedHealth workers.

Schetti didn't start her career in operations: she has a 10-year background in hotel and restaurant administration. But it's the skills that drove her in those careers that make her effective in IT: communication, coordination and organizational capabilities.

Schetti is the first to acknowledge that she's no programmer. "I don't need to know what a programmer needs to know," she says. "I need to understand how the different systems interface with each other — the store system, the inventory system, electronic commerce — and how we affect them when we make changes to our system."

That takes good communication. "The business partners have to understand where we stand in terms of design and development," Schetti says.

Even without a degree in computer science, Schetti's

organizational skills — along with her tenacity, pleasant personality, ability to confront people effectively and conscientiousness — will help her IT career, says Klein. She's a prime candidate for becoming a project manager, he says.

Finance

You might also do well to look in finance for IT candidates. "To do well in finance, you have to have a fairly good [grasp of how things are organized], be analytical and solve problems," says Nick Vitalari, executive vice president at The Concours Group, a consultancy in Kingwood, Texas. Plus, he says, people in finance might be familiar with high-level languages such as SAP AG's Advanced Business Application Programming.

Stacy Dennis, information systems project manager at UnitedHealth, hired through a Learning Institute graduate who came from a financial reporting background. He had used tools like Microsoft Access, but more important, he had business knowledge: "He knows what the company sells, and we didn't have to explain generic terms that someone from another line of work might not understand," Dennis says.

Actually, the employee's ability to work with numbers wasn't all that important, Dennis says. "It was his level of responsibility and the fact that he had worked with an Access database that gave him a high level of knowledge of how data relates to the business world."

Clerical

A less obvious place to look is in the legal profession. Metamor Technologies Inc., a consulting firm in Chicago, has

run programs to train non-IT workers to become consultants. The best candidates were those with a background in law. "The reason we targeted that profession is that we had hoped, in going through those years of law school, that they had been taught how to think logically," says Marcie Newman, director of human resources at Metamor. "In fact, it looked to be true."

Research

Actually, anybody who can adhere to a rigorous methodology — such as a researcher — may be a good candidate. "I've heard of stories where a lab technician in biotech goes from a lab bench into IT," Vitalari says. "They know how to follow procedures and [that do- ing] them right or wrong [will lead] to good or bad results."

In comparison, people who come out of a much less structured environment, like marketing, might have a lot more trouble with IT, Newman says.

At Metamor, one of the managing consultants started as a receptionist. Such moves aren't unusual, Vitalari says. "If someone is organized, likes to organize things, can structure problems — they may well have the aptitude to move into IT areas," he says. And perhaps he puts it best: "Whether a person makes a good IT person really depends on: are they interested in solving problems, do they have the imagination to think about solutions, do they have some analytical skills, can they approach problems in a structured way and do they have a desire to play around with technology?" ⬛

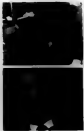*Brandel is a freelance writer in Norfolk, Mass.*

MARY SCHETTI, went from project coordinator to systems planning consultant at Sears

What to Look for In a Non-IT Hire

■ Logic and analytical capabilities

■ Ability to adhere to methodology or procedures

■ Structured problem-solving skills

■ Business understanding

■ Good communications skills

■ Organizational skills

■ Ability to deal with complex systems

■ Creative problem-solving skills

THE
Faces OF
Y2K

They've labored in the shadows for years: replacing and testing, planning and preparing. With 110 days to go before Jan. 1, we take time out to spotlight and honor the IT professionals, managers and everyday people who are devoting a large part of their lives to the Y2K problem

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THE Faces OF Y2K

Legal Advice

NEW YORK

At a conference in July, Jeff Jinnett, a New York attorney specializing in Y2K law, discusses conducting your 2000 risk assessments and preparing "due diligence records." The conference, "Year 2000 Event Planning," was sponsored by IBC USA Conferences Inc. in Southboro, Mass.

Planning for Disaster

SONY CORP. Karl Percy, left, and Geo Law look over data during a July 15 disaster-recovery planning session at Sony Music Entertainment Canada in the Toronto suburb of Mississauga, Ontario. They're part of Sony's disaster-recovery team, whose 20-plus members come from different company divisions. If there are any Y2K-related problems around the turn of the year, they'll be on the front lines, ready to respond

Testing a Power Plant

BALTIMORE GAS AND ELECTRIC CO. Kenneth McGreevy, electrical and instruments and controls supervisor at Baltimore Gas and Electric, monitors the downloading of a Y2K test in a control room at the utility's Brandon Shores power plant in Pasadena, Md., last year. BG&E, which has 1.1 million customers, declared its Y2K readiness June 30

Air Check

DELTA AIR LINES INC. Airline operations VP Walter Taylor, right, gazes out over Delta's Technical Operations Center in Atlanta, where aircraft parts, shop equipment and computers have been Y2K-tested. Below, developers Carol Cady and Mike Swiss test Delta's Passenger Revenue Accounting system

Spreading the Word

BANK OF AMERICA CORP. David L. Dorton, vice president and manager of a Bank of America branch office in San Francisco, shows teller Fiona Yau a copy of a new pamphlet on the bank's Y2K program that is being given to customers

Inside a Y2K War Room

MEDICAL MUTUAL OF OHIO Huddling together, members of the disaster-recovery team at Medical Mutual review data on the compliance of different systems within the health insurance company. The team, led by Mary Livens (in green) will use the information to determine what it may need to include in the company's contingency plans

THE Faces OF Y2K

Concerned Citizens

AUSTIN, TEXAS Television cameramen focus on a woman getting ready to pose questions to a panel of year 2000 experts at a community meeting about Y2K in July in Austin. The meeting, sponsored by the state and the city, drew about 375 people

A Factory Retools

JOHN DEERE & CO. Dan Wood, left, and Ron Storlie replace an old, non-Y2K-compliant VAX/VMS computer, left, with a new, compliant PC on the factory floor at John Deere Harvester Works in East Moline, Ill. The computer is a key part of the process for making combine machines, which help farmers harvest grains

BUSINESS QUICKSTUDY
FINANCIAL & BUSINESS CONCEPTS IN BRIEF

Virtual Corporation

BY JOYCE CHUTCHIAN-FERRANTI

IMAGINE if going to work were a matter of simply rolling out of bed and walking over to your computer while still in your pajamas. Or if a meeting with the New York-based sales department, San Francisco-based marketing department, Dallas-based distribution department, Cleveland-based manufacturing arm and St. Louis-based IT department occurred without anyone having to leave an office. Welcome to the virtual corporation.

What Makes a Virtual Company

Virtual corporations can be defined in many ways, but here are three of the most common examples.

First, a virtual corporation can be a group of skilled people who form a company but who rely on technology as a backbone. Each person or partner has a specific function, and they all have strong communication skills, a high level of trust and a common workstyle. The partners mostly communicate via e-mail, phone, fax or videoconferencing. Often the employees work from their homes rather than an actual office building, as at Associated Competitive Strategies (ACS) (right).

The second is a group of partnering companies or people that specialize in particular functions, such as supply, manufacturing, information systems or distribution. They come together to form a temporary or sometimes permanent company that serves to tackle a particular task. The partner members communicate with one another via e-mail, phone and fax or in person. There is a high level of communication and trust, as in the above example, because the partnering companies rely heavily on one another to make a particular project work.

An example of this is Agile-Web Inc. (www.agileweb.com) in Huntingdon Valley, Pa. AgileWeb is an organization that provides manufacturing services by leveraging the capabilities and expertise from a pool of manufacturing firms to meet the specific manufacturing needs of each client.

Third, the virtual corporation can be a large company that chooses to outsource many of its important operations, such as manufacturing or distribution. It may do this through joint ventures with suppliers or by partnering with other companies that specialize in particular areas. This allows the company to focus on what it does best. For example, a computer company might sell its own brand-name computers, but the company might not have an actual warehouse or factory. It can partner with equipment manufacturers overseas that make the computers and then send them directly to the customers using another partner company that handles distribution. The management company can then concentrate on sales, marketing and customer service.

Key Way of Doing Business

"This isn't hype, it's just an essential way of doing business," says Peter G. W. Keen, founder and chairman of Keen Innovations in Great Falls, Va. "Every firm is doing it."

It's true. Some companies, large and small, old and start-up, are finding that they can cut costs and leverage the most out of their staff and budgets if they partner with other companies that specialize in particular areas that they can't do as well or as efficiently themselves.

In either case, the key to making a virtual corporation work is communication and effective IT. "The technology architecture is the organizational structure," says Keen. "Your systems can't be down." After all, if you don't have a means of communication, a company can't function. And if your communication is all electronic, well, say no more. This is true for any virtual corporation, whether it be large or small.

There's also the psychological aspect of communication. "[Virtual corporations] are supported by technology, but the challenge is that they are 90% people and 10% technology," says Jessica Lipnack, co-author of the book Virtual Teams. "That's where virtual organizations are caught."

Take Mark Chassil, president and co-founder of virtual company ACS, a business simulation and strategy company.

Chassil works out of his home office in Portland, Ore. His vice president and director of sales is also in Portland, Maine. ACS also has a software developer in Seattle, a Web site developer in Portland, Ore., and consultants in both Portlands. All work from separate offices. Chassil's partner and co-founder is in Philadelphia — that is, when he isn't in Boston. All the employees work out of their homes and meet with clients and other staffers regularly, either at client sites or hotels, via e-mail or phone.

"We have close ties with each other, but the ties are all electronic," says Chassil.

No Geographic Restraints

That's one of the great advantages of a virtual corporation. From a hiring perspective, it's often a win-win situation. You can be choosy about whom you hire, and you don't have to worry about relocation issues. You also get to branch out geographically without spending money on overhead costs.

"You can hire people outside the local pool," Chassil says. "We hire the best talent that's available."

Trust and collaboration are a must in order for a virtual organization to work. And as with most companies, the virtual corporation is completely dependent on IT to communicate with others. Regardless of whether a company is large or small, if your IT function goes down, communication comes to a halt — and so does your business. ■

Chutchian-Ferranti is a freelance writer and editor in Concord, Mass.

> **DEFINITION**
>
> A virtual corporation is an organization in which nearly all staff or partners work together across boundaries. The boundaries can be geographical or organizational. The corporation's members have specific functions or skills and often use information technology to communicate.

Business, Virtual Style

Mark Chassil is the CEO and co-founder of Advanced Competitive Strategies, a business simulation and strategy company with employees and partners throughout the U.S.
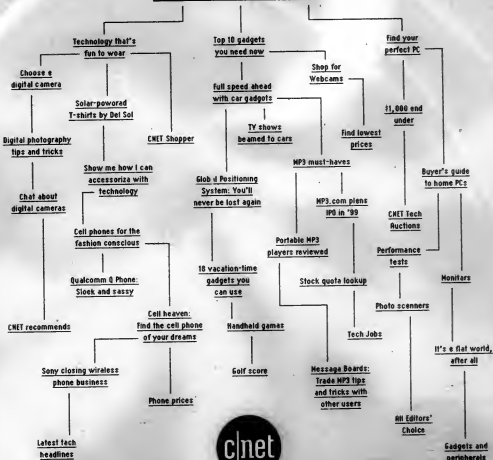
Q: Why did you create a virtual corporation?

A: We did it because it was a lifestyle preference. There are many advantages to it. Everyone who works here enjoys the lifestyle. It doesn't work for everyone, but it works for those who work here.

Q: Where are your based?

A: There is no home base or headquarters. When we have meetings, it's in one person's house or another person's house. There's no central location with overhead. We often meet with clients at a hotel.

Q: What are the benefits to a virtual organization?

A: From a business model perspective, the cost structure is advantageous. The virtual corporation keeps costs low. We can hire anyone. We get access to the best talent that's available.

Q: What are the drawbacks to working for such an organization?

A: Well, for one thing, there's no watercooler effect. There's no random interaction when you bump into each other. We try to set up meetings with each other by phone conferences and client meetings.

Q: Can you offer some advice to those who are considering working at or creating a virtual organization?

A: Think about whether you have the discipline to work virtually, or if you need to go to an office. Definitely then through the communication side. You need access to other people, and you need a culture that supports that. Our company works because we are all very similar types of people.

Q: What does it take to make a virtual company work?

A: An attitude that says "Why not?" There are so many traditional attitudes that we learn in schools, from home and from TV. It takes someone to say "Why not do it this way?"

MORE ONLINE
For more information on virtual corporations, visit our Web site.
www.computerworld.com/more

JOE AUER/DRIVING THE DEAL

Short-term software licensing: Don't buy it

RECENTLY, A CUSTOMER SCRUTINIZED a vendor's standard software license agreement. The language went like this: "Supplier hereby grants to customer a nonexclusive, nontransferable license for software and related documentation for a period of three years from the date of execution of this agreement."

The problem? The customer wasn't getting what he thought he was paying for: the perpetual right to use the software. He was getting only a limited right to use the software for three years — less, actually, because the clock starts running upon execution of the agreement, not when the customer accepts the software. What's more, after the term is up, the software must be relicensed to continue its use.

Please be reminded that the software license grant section of a license agreement is one of the most important sections because it normally specifies all your rights to use the software. It's crucial to determine all the rights you'll ever need and negotiate them into the agreement. Also, contract terms and conditions need to be negotiated early in the evaluation process and before final supplier selection.

So insist on broad license rights. Without the proper license, you may be subjected to sizable relicensing or use continuation fees downstream. To avoid that unpleasant surprise, negotiate a license with language such as: "In consideration of the license fee paid by User, Supplier hereby grants to User a perpetual, irrevocable, transferable, nonexclusive license."

Less Risk

This significantly reduces your risk and saves you money by ensuring an ongoing right to use the software. With a perpetual license, you're buying the right to use the software to run part of your business for as long as necessary. You'll have to pay annual maintenance and support fees, but those should be your options.

Your license should also be irrevocable. Otherwise, suppliers may revoke your right to use the software, and that gives them immense leverage.

If the license is irrevocable, the supplier must convince a judge that you've done something wrong and get an injunction to halt your usage.

Remember, perpetual and irrevocable are key words in

software licensing. Most suppliers these days offer neither, even though it used to be common practice. However, with a strong negotiating position on your part, a perpetual, irrevocable license can once again be obtained. Go get 'em, and you'll gain peace of mind and a better bottom line.

Mailbag

Responses continue to come in about my July 5 column on the automaker that was getting burned by a ZIP code automation software supplier. (Watch for a report on the resolution soon.)

Many wrote sharing similar advice, but most interesting was how many similar situations there were.

For most, no-cost upgrades had been done for years with only minimal administrative fees, and then suddenly a customer upgrade request was followed by a vendor invoice for an outrageous sum.

This kind of profiteering is common, but not universal. In fact, one IT manager who wrote mentioned his

ZIP code automation vendor by name and said he hadn't had any problems with the company. And guess what? It was the automaker's vendor. More proof that vendor policies aren't enforced across the board or that they are just regional profiteering ploys.

Several times I was asked, What's the name of the software company? In the automaker scenario, there was potential litigation against the vendor, so names were left out. In other columns, confidentiality is important.

But the point is, it doesn't matter what company's involved. This column is about how to deal with most, but not whom to do them with. We're equipping you to deal with anyone.

Avoiding a specific vendor mentioned in a column won't protect any IT manager from the perils of the unscrupulous, nor will relying on a vendor's good reputation. The only protection is solid contracts, negotiated up front with fair terms for both parties. ◆

Cure-all?

For a great night's sleep, try Compaq Deskpro. It relieves the headaches of day-to-day PC management with powerful features like the new Compaq Insight Manager LC. It's the industry's first integrated tool for managing workgroups of PCs from a simple, browser-based interface. So you spend less time playing doctor and more time getting *real* work done. Just another healthy dose of exceptional value from Compaq —and another reason Deskpro is number one. For more therapeutic thoughts, visit www.compaq.com/deskpro, contact your reseller or phone 1-800-AT-COMPAQ.

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TECHNOLOGY

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FLASHBACK

Bell Labs researcher Bjarne Stroustrup called his creation "C with classes." In 1985, Bell Labs first made C++ available to university users. Also that year, Steve Jobs left Apple. ▶ 96

UPTIME IS JOB 1 FOR EBAY CIO

AS CIO AT EBAY, Maynard Webb's job is to improve uptime at the online auctioneer after a series of costly and embarrassing service outages. In the short run, that means redundant servers; in the longer run, it will mean a distributed architecture aimed at eliminating single points of failure.

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TECHNOLOGY SOFTWARE

Tandy's Got Questions; Novell Has Answers

Scalability, cross-platform support help retailer roll out applications

BY DAVID ORENSTEIN

TANDY CORP.'s ads for Radio Shack promise that if customers have questions, the electronics retailer has answers. But without a directory-managed network, Tandy won't

have an easy way to get those answers to employees at its 7,000 stores.

As it begins to roll out Web applications that will provide access to inventory and parts data, warranty information and answers to likely customer questions, Fort Worth, Texas-

based Tandy is grappling with the complexity that scale brings. Using Novell Directory Services (NDS) for Windows NT and eventually the multiplatform NDS 8, network services director Ron Cook said he's confident "we have a great solution for the next three-plus years."

"In this business, that's about as good as you can get," he added.

The drive by companies such

as Tandy to pour Web and e-commerce applications into highly distributed environments is swelling demand for directory software, which has grown from fewer than 2 million servers in 1997 to nearly 13.6 million in 2003, according to International Data Corp. in Framingham, Mass.

200,000 Network Objects

Right now, Tandy has about 11,000 network objects such as users, printers and servers. But as the application rollouts continue, Cook said, "I don't think it's inconceivable to get to 100,000 to 200,000 objects in a year to 18 months." The rollouts have just begun and will wrap up next year.

Analyst Tim Sloane at Aberdeen Group Inc. in Boston said NDS should be capable of handling Tandy's load. "I do believe Novell has put more thought into this than any other vendor," he said. Cook said NDS 8 is undergoing stress tests in Tandy's lab.

But it isn't just about scale. It's also about interoperability. The applications Tandy must manage are based on Windows NT, HP-UX and OS/390. Users also have passwords for Net-

Ware, Microsoft Exchange and PeopleSoft. Cook ultimately wants to give end users a single sign-on because confusion about logging on can quickly scuttle an employee's ability to provide answers.

"When I think of the number of calls to the help desk, one of the biggest issues is the passwords not being simpler between NT, Exchange and NetWare," Cook said. Cutting the number of user IDs and passwords in half can cut administrative costs in half, too, he said.

Ultimately, Cook said, Tandy would like to link its PeopleSoft personnel applications to systems such as Exchange so that when an employee is hired or leaves, the user accounts could be created or deleted automatically. But NDS does not run yet on HP-UX where PeopleSoft is deployed or on OS/390, another key platform for Tandy. Novell is planning ports to those platforms as well as to Linux and Tru64 Unix.

NDS's emerging cross-platform support will make it crucial even after Windows 2000 is released with its highly touted but platform-specific Active Directory, Cook said. "I like my heterogeneous network. I look forward to Windows 2000 but will be doing most of the management and security with NDS," he said.

That way, he said, "I can use the best-of-breed solutions in the right place." ❑

RON COOK: Novell Directory Services software gives Tandy "a great solution for the next three-plus years"

E-Mail Web Updates Keep Army on Track

Software lets troops use Word to update Web pages

BY DOMINIQUE DECKMYN

Setting up a Web publishing system for a short-lived, distributed and mobile team can be a challenge. When the U.S. Army Signal Command was looking for an easy way to communicate troop status during a military communications exercise, Real-time Page Management (RPM) from little-known Reedy Creek Technologies Inc. in Four Oaks, N.C., fit the bill.

RPM lets users enter or modify Web pages in Microsoft Word. A Word plug-in then sends the information to the Web server via an encrypted e-mail message. Ken Thompson, a major in the U.S. Army Reserve and a data network officer for the Grecian Firebolt exercise, said he liked how the system allowed users on the move to update a Web page without having direct access to the Web server, easing security concerns.

Fast and Flexible

The software let Thompson assign users the right to modify only certain parts of an HTML document. But, importantly,

Thompson said, he also needed a system that was "very, very flexible and that could be put together quickly by one person." That ruled out more complex database-driven systems. The Army considered Microsoft Corp.'s Visual InterDev for the task, but there was no time to do custom development, said Thompson.

Grecian Firebolt involved 5,000 people in multiple countries. The exercise aims to set up an ad hoc international communications network based on Internet standards but separate from the public Internet. The Army has set up

such so-called "tactical Internets" during Desert Storm and in Bosnia, Thompson said.

Neal Davis, president and CEO of Reedy Creek, said the product offers much of the security and fine-grained control offered by dynamic, database-driven Web content management products such as those from Vignette Corp., but with less complexity and cost.

RPM SOFTWARE lets users modify Web pages from remote locations

RPM costs $999 in a version that allows for 25 "ports," or modifiable zones on a Web site. It runs on Windows NT, Linux and several Unix variants. RPM has been available since last year, but it's only now being marketed on a national level.

The Research Triangle Regional Partnership, a nonprofit organization, is also using RPM to allow multiple nontechnical staff members to update its Web site.

But analysts are skeptical about the concept's broader appeal. "I can't see any real advantage to [updating Web sites] by e-mail rather than through a browser," said Harley Manning, an analyst at Forrester Research Inc. in Cambridge, Mass. ❑

WORD ABOUT
THE NEW MANAGEMENT TEAM:
ATTITUDE

Antispam Organization Critical of EU Opt-Out Proposal

BY DORTE TOFT

The European Commission won't succeed in protecting consumers against unwanted e-mail with rules proposed in Brussels last week, according to Ray Everett-Church, a co-founder and counsel for the Coalition Against Unsolicited Commercial E-mail (CAUCE), a volunteer organization based in the US.

The proposed opt-out registers are likely to have little, if any, effect on the flood of e-mail promoting pornography, get-rich-quick scams and products, said Everett-Church, who is the chief privacy officer at Internet company AllAdvantage.com in Hayward, Calif.

According to the proposal, all 15 member countries of the European Union will make available to consumers a register in which they can state their preference to not receive unsolicited e-mail, and companies will be obliged to respect their wishes.

If the rules, part of a revised framework for e-commerce proposed by CAUCE, are passed by the EU's Council of Ministers later this year, all EU countries will enact them.

History's Lessons

The U.S. experience with opt-out registers — whether targeted at limiting direct mail, telemarketing or spam — isn't encouraging, according to Everett-Church.

"Take e-mail. It makes very little economic sense for the companies to use time in order to take people out of their list when the cost of sending an e-mail is almost nothing," said Everett-Church.

Also, a lot of spam is attributed to companies operating on the "fringes of legality," doing all they can to avoid being traced and made accountable, Everett-Church said. "They will never use such a register," he said.

The only effective way to protect people is to ban spam, just like the U.S. bans unsolicited advertisements via fax, said Everett-Church.

"Ignoring the [fax] ban costs a fine of between $500 and $1,500 per fax received, and that helped stop the practice," he said.

However, the European Parliament rejected a proposal to

ban spam in May in a 266-137 vote. (To see how individual members of the European Parliament voted, visit the site www.euro.cauce.org/en/vote_result.html.)

In the U.S., about eight states have already passed laws limit-

ing spam in various ways, and laws are pending in more than a dozen states, according to Everett-Church. He said he expects a federal law banning spam to be passed. "Several proposals are pending on Capitol Hill," he said.

Toft writes for the IDG News Service.

Compaq's Lightweight Aero 8000: The In-Between Portable Machine

At 3 lbs. it makes a neat thin client, but wimpy CE apps limit its usefulness

BY RUSSELL KAY

ISSST! I TURNED to see a sleazy-looking character in a dirty trench coat. "Hey," he said. "Wanna real good deal on a laptop?" He swung open his coat to reveal a notebook on a shoulder strap. "It's a steal," he continued. "A brand-new Compaq, 32 megs of RAM, built-in modem, costs under a grand. Comes loaded with all the Microsoft Office apps, e-mail, Web surfing, the works. And it weighs under 3 pounds."

This was too good to be true. I asked how big its hard disk was. "Er," he muttered, "it's new technology, doesn't need a hard drive."

I asked if it ran Windows 98 or NT. "Oh, it's real Microsoft Windows, see?"

That's what I thought he said. However, he was cleverly trying to conceal the truth: Windows CE, Microsoft Corp.'s cut-down operating system for handhelds.

I took a closer look. Compaq Computer Corp.'s new Aero 8000 is about 20% smaller than a typical laptop and a lot lighter. Unlike most CE machines, the Aero doesn't use a touch screen or stylus, preferring a touchpad and buttons. Of all the Windows CE machines, this could be the best.

I've enjoyed using the Aero 8000 — I drafted this review

on it — but it's really a puzzle, raising important questions about the direction of portable computers.

With its sleek 3-lb. body, 10-in. screen and small-but-OK keyboard, the Aero looks a lot like Sony Corp.'s Vaio 505 or IBM's ThinkPad 240.

But those machines use Windows 98 (the ThinkPad even runs Windows 2000), while the Aero makes do with Windows CE and its cut-down applications — Pocket Word, Pocket Excel, Pocket Outlook and others. You can view a PowerPoint presentation, but you can't edit it or create a new one.

CE's limitations aren't a problem unless you're expecting it to do a lot more than it can. But the $949 Aero isn't much cheaper than a "real" laptop. There's no floppy, no hard drive and no CD-ROM. For storage, you have to add

compact flash or PC Card memory cards or hard disks. I've seen Windows 98 laptops (admittedly not lightweight) selling for well under $1,500, and for that you get double the RAM, a hard drive and CD-ROM and a larger screen. In today's market, you can buy two desktop PCs for the cost of

one Aero. Looking at value, CE loses. So whom is the Aero aimed at?

The Aero is instant-on; lift the cover and you're up, with no wait for booting. Battery life is significantly longer than a notebook, sometimes getting past eight hours.

Also, the Aero can be a useful thin client. You can dial in to an NT terminal server and run regular Windows applications.

Finally, the Aero offers enhanced security via a built-in SmartCard reader for use with access control and encryption software. Thus, the Aero could look good to IT managers seeking a secure, mobile thin client.

One more try. Is this the answer for the person who wants to travel light but still do word processing, e-mail and spreadsheets on the road? If it's not for the road warrior, maybe it's OK for the road wimp.

I tested that by taking the Aero on a trip.

Right off the bat, I couldn't connect the Aero to Computerworld's Notes e-mail. I needed configuration information that I didn't have. I did use Pocket Outlook to send and receive POP3 Internet mail (IMAP4 works, too). I sent and received images and Microsoft Word and Excel documents as attachments.

In sum, the Aero 8000 is a decent traveling companion, easy on the shoulder, but I found it barely adequate in features and power. ▶

RUSSELL KAY/COMMENTARY

It's dead, Jim: Lessons from a laptop crisis

I TURNED ON MY laptop and nothing happened. Oh, a couple of lights came on, but the screen stayed blank, and there was no reassuring whir from the disk drive.

I've had plenty of experience booting problem-ridden computers, but here I was baffled — not even an error message. I tried the usual tricks — Escape, Return, Ctrl-Alt-Del, gently shaking and tapping the box, reseating connections, turning it off and on.

Zilch. Nada. Zip.

Hard drives are mortal, even with 1 million-hour-mean-time-between-failure specs. They still die unexpectedly and, like most deaths, they upset us. Laptop drives are particularly

vulnerable as they are carried about, bumped and inevitably dropped.

As a computer security veteran, I know the importance of backup. But, like most users, I've sometimes been negligent about my own PC. Some new software, however, has made backup easy. There's Iomega Corp.'s QuikSync, which works only with that company's own Zip, Jaz and Clik drives; and AutoSave from V Communications Corp.

When my laptop died, I was using AutoSave, which

backs up a file to an alternate location when the file is closed. By default, Auto-Save saves to an other directory on your hard drive, which wouldn't have helped me. But I was saving to a 260M-byte hard drive from Calluna Technology Ltd., the $299 Callunacard, which plugs in to a type II PC Card slot (the thin one).

I plugged the Callunacard into a second laptop, installed AutoSave, and within 10 minutes I had everything

back. Almost. I had accepted AutoSave's default settings about what (and what not) to save, so I lost some files.

I estimate the incident cost me about a half-day of work, plus the equivalent of another full day later on configuring a new laptop.

There's another potential cost: This laptop was on loan for review. If I return it to the vendor, what happens to the data on its hard disk — unpublished articles, interview notes, test results, e-mail and confidential documents? I have to decide whether to start encrypting my entire hard disk, or at least some specific data directories. I don't want to, but neither do I want to worry about my data's confidentiality again. ▶

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IBM Unveils Servers for Internet Providers

BY STACY COLLETT

IBM is taking aim at the Internet service provider market with a pair of new thin servers to be available by month's end.

Netfinity 4000R, codenamed Intimidator, will be a 1.5-in.-thick stackable unit. Priced from $3,000 to $4,000 depending on configuration, the 4000R includes a 300-MHz Pentium III processor and will run Linux and Windows NT.

IBM this month will also unveil the Netfinity RS6000 Model B50, called Pizazz. It 3 inches thick and comparable with the 4000R in performance, but it runs Linux and IBM's AIX for RISC platforms.

"It's all about a push toward the [Internet service provider] market," said a spokesman for IBM. "The biggest concern they have is to get their system up and running as fast as possible."

IBM will offer configure-to-order and preinstalled NT on the new servers.

Early in the first quarter, IBM will also preinstall software based on the configuration requested by an Internet provider.

That way, Internet providers or application service providers can order a server, pull it out of the box, slide it into the rack, plug in the power and network connections and be up and running. The servers' small size also lets Internet providers expand without space constraints.

About 30 software vendors will offer applications for the new IBM servers, according to a company spokesman. They include Inktomi Corp, Real Networks Inc. and Resonate Inc. ▶

Via Finalizes Takeover

BY TERHO UIMONEN

Via Technologies Inc. last week announced it has completed the takeover of the PC microprocessor assets of National Semiconductor Corp. subsidiary Cyrix Corp.

An undisclosed part of the $167 million sale price was paid at closing, with the remainder to be contingent on revenue from Cyrix product lines, the Taiwan-based chip vendor said in a statement.

The deal gives Via all assets pertaining to the MII line of x86-compatible processors and successor products previously owned by Santa Clara, Calif.-based National Semiconductor. It also makes Via the only Taiwan-based company to compete head-to-head with chip giant Intel Corp. in the market for PC processors.

Via last month announced plans to purchase the x86-based processor business of IDT Inc. in Santa Clara, Calif. ▶

Uimonen writes for the IDG News Service in Stockholm.

New CIO at eBay Aims To Improve Uptime

Says distributed architecture, redundant servers should reduce costly outages

A S THE recently appointed CIO at eBay Inc., **Maynard Webb's** first task is to stem a series of embarrassing service disruptions that have cost the world's largest online auctioneer millions of dollars in lost revenue and lowered the price of its stock. Webb, a former CIO at PC maker Gateway Inc. and an information technology executive at companies such as Bay Networks Inc. and Quantum Corp., spoke with *Computerworld* senior editor Jaikumar Vijayan about his plans for eBay.

Q: What has caused the disruptions?

A: We have an extremely scalable and right application that is all written in C++ and has a lot of headroom and long left to run. What we didn't do so well was to put as much focus on reliability and availability of our platform. We didn't have hardware redundancy and fail-over, so if our database server crashed for any reason, we had to fix all of the elements of the server itself to be able to roll back and get the site back up.

Q: What are you doing about it?

A: We already have a major backup situation where we should be able to get back up . . . within two to four hours of an outage. By the middle of October, we will have a high-availability backup [with fully redundant servers] that will have us back up within an hour.

At the same time, we are working on our next-generation architecture plan to [eliminate] any single point of failures. We are looking at distributing the application and database over multiple servers to make sure we can handle the 100x growth in database activity we are experiencing.

Q: What kind of testing are you doing?

A: Building a test environment to simulate all this is not a trivial thing. I would like to spend more time testing [applications], but we've got time-to-market issues. We've spent a lot of time improving our quality assurance capability. I think we have done a reasonable job of testing a lot of the changes [to] do a very safe rollout [and making sure] that we are implementing all our operational policies and procedures.

Q: So how do you figure out how much capacity you need?

A: It is an art, not a science. I was just at a meeting where we were talking about [immediately] adding more DASD [direct

EBAY CIO MAYNARD WEBB is on a mission to stem service disruptions that have cost the online auctioneer millions of dollars

access storage devices] than we would have in a six- to eight-month period. You simply have to get tighter, simpler and be smarter on things like archiving and DASD management.

Q: How do you figure out how much to spend on upgrading your site?

A: We know exactly what downtime can cost us in lost revenue. We have a very strong and very loyal user community, and the biggest roadblock is our inability to scale. We will spend cost-effectively and prudently. It would be silly for us not to buy the capacity we need and to stay ahead of our wildest dreams on capacity.

Q: What advice do you have for companies grappling with similar issues?

A: I think you need to bring an elephant gun to kill a mouse. Hardware is cheap, the pace of the game is frenetic, and being the first mover in an industry like this is very important. You really need to figure out what the business plan is, do a what-if scenario that is beyond your wildest dreams and build an architecture that lets you scale beyond your wildest estimation. ▶

Wireless Rollout Eases Appraisers' Work

Attention to technical details key to making strategy reliable and cost-effective

BY MATT HAMBLEN

Country Companies Insurance Group recently rolled out wireless data connections for 85 of its auto claims appraisers, saving them an hour's time each day and speeding customer response time.

Like many companies, Country Companies, in Bloomington, Ill., knew the wireless technology would ease data access. But fussing with the technical details was key to making it reliable and cost-effective, managers said.

When a customer makes an accident claim, he calls a toll-free telephone number, and an

agent takes the data and transfers it to a Bloomington-based mainframe. About 35 minutes later, the appraisal is assigned and sent wirelessly to the correct appraiser.

In order to keep radio air time costs down, appraisers, who use the Bell-South Corp. Wireless Data Network to receive assignments several times per day, wait until night to send back the appraisal reports over a wireline network, said Gary Sharp, manager of claims support.

Sharp negotiated a deal to pay up to 37 cents per kilobyte of data transmitted wirelessly. The data is sent at 9.6K

bit/sec, with an actual time to download a claim assignment of about 45 seconds.

Like many wireless competitors, wouldn't reach every appraiser's territory in the western U.S., so only about half of its 145 appraisers even try wireless access. The rest use conventional land lines.

To make efficient use of the network, each appraiser's laptop comes loaded with a database of automobile types and parts, so claim assignments downloaded to the clients are kept to 5K to 15K bytes. The amount of data on the client is 420M bytes.

Going wireless has saved driving time for appraiser Ken Smith, who has often made a connection when finishing an appraisal and found that the next assignment is close by.

Shay estimates that the company can complete 20% more estimates per day with the wireless approach since it began to roll out the wireless ac-

cess in May. And customers usually get a claim check as soon as the appraiser finishes because he prints a report from his laptop.

Company officials declined to state the cost of the wireless system or its return to the bottom line.

The 140 appraisers have been familiar with the laptops for more than a year, running a popular appraisal-estimating software called PenPro from ADP Claims Solutions Group in San Ramon, Calif.

ADP worked with Nettech Systems Inc. in Princeton, N.J. Netttech sells Smart IP, software that runs over TCP/IP but cuts packet counts by up to 80% and actual data by up to 60% using a proprietary protocol, analysts said.

Andrew Seybold at Andrew Seybold Consulting Group in San Jose, said Netttech's software is one important reason wireless will begin to make sense for average computer.

"TCP/IP is **actually** a terrible wireless protocol and way too chatty, but Netttech takes the TCP/IP and makes it much more efficient," Seybold said. ▶

Performance. Not Promises.

PROGRESS
S O F T W A R E

Weaving a Storage System With Fibre

Brocade bets big on Fibre Channel as the future of storage and networking

BY CYNTHIA MORGAN

C AN A 1,000-POUND industry gorilla also be the new kid on the block? Sure, when you're talking about Fibre Channel. Now that there are signs that Fibre Channel may finally come into its own, (relatively) old hands at it, like Brocade Communications Systems Inc., are taking on a new luster.

Fibre Channel is a networking technology that works best when it's exchanging huge amounts of data over a relatively short distance. It's tailor-made for delivering data from storage to microprocessor in a disk farm or storage-area network (SAN), or between servers in a cluster.

First defined by the American National Standards Institute in 1992, Fibre Channel was seen as a solution to the looming I/O bottleneck.

Fibre Channel delivered data at gigabit rates. It was also capable of carrying popular data transfer protocols such as IP, Hippi and SCSI simultaneously. And it had sign-ons by major players in the network storage game: Hewlett-Packard Co., IBM, Sun Microsystems Inc., Seagate Technology Inc. and EMC Corp.

But when Sun announced the first true Fibre Channel product in 1994, a storage array subsystem for its SPARC server line, buyers didn't exactly stampede to the checkout counter. So with all that Fibre Channel had going for it, why didn't it take off?

First, it was too new. Data centers, particularly those with a massive investment in older storage equipment and lots of data to protect, don't leap for every new technology that comes along. Second, although Fibre Channel showed promise, the management software needed to exploit its capabilities just wasn't there.

Besides, like every hot new technology, Fibre Channel suffered from an excess of proprietary products. Despite the technology's firm grounding in standards committees, there was only a slim chance that one company's Fibre Channel products would work with another's. The most popular Fibre Channel connections linked one Fibre Channel device directly to another in a point-to-point arrangement.

Unless those devices could interoperate, CIOs had the choice of replacing every relevant device with one that supported one company's Fibre Channel solutions — periodically costly or even impossible — or winding up with two very fast, very expensive devices talking just to each other, not much use in the broad-scale enterprises where Fibre Channel was desperately needed. So most Fibre Channel products languished in the background.

Several things have happened to change that. First, network management technology has slowly evolved to embrace dynamic storage allocation, high-performance backup and other around-the-clock data capabilities. Second, Brocade recently signed agreements with Tivoli Systems Inc. and Computer Associates International Inc. And CA's Unicenter will incorporate those capabilities into a Fibre Channel SAN management system.

Rather than linking two devices only to each other, Fibre Channel switches such as Brocade's SilkWorm series can mesh several interconnected Fibre Channel devices and switches into a storage network fabric. Storage network fabrics work much like the routers that weave enterprise resources together. Any connected Fibre Channel device is cross-connected to its neighbors — add a new port and you increase capacity for all devices in the fabric. The storage

fabric topology fits very well into this model; it allows for automatic fail-over to a second device somewhere in the mesh if the first device goes down.

The SilkWorms can also cascade, or nest, multiple switches in the same fabric, making it possible to increase the number of available connections. And administrators can create special user zones within the network, complete with additional firewall protections.

The increasing popularity of SANs and knowledge management systems demands loads of mission-critical data, so network administrators are increasingly specifying a Fibre Channel solution.

Those trends seem to be working for Brocade the company's May 1999 initial public offering, at $19 per share, quickly earned $65 million, beating out most of this year's dot.com IPOs. The stock is currently selling for about $190 per share, 10 times its original asking price.

Brocade's goal, to eventually replace high-performance hubs in networks, is more than a little ambitious. If it succeeds, it will bring the cost of Fibre Channel technology to the wordgroup level and below. And if that happens, Brocade will be sitting in a very pretty position indeed. ⬦

Brocade Communications Systems Inc.

Location: 1901 Guadalupe Pkwy, San Jose 95131

Telephone: (408) 487-8000

Web: www.brocade.com

Niche: Fibre Channel switches for SANs.

Why it's worth watching: Brocade's SilkWorm switches are the backbone of a Fibre Channel SAN and one very good way to get its true dynamic administration of large data repositories.

Company officers:
Greg Reyes, CEO
Kumar Malavalli, vice president of technology and founder
Paul Bonderson, vice president of engineering and founder

Employees: 140

Milestones:
1995: Company founded
1999: First switch shipped

Customers: NASA, Burlington Coat Factory Warehouse Inc.

Financing: Original financing came from a series of venture capitalists. Backers include Mohr Davidow Ventures, Imperial Bancorp and LSI Logic Corp. Additional funding from an initial public offering in May raised $65 million.

Products: Brocade SilkWorm Fibre Channel switches

Technology partners:
Data General Corp., Groupe Bull SA, McData Corp., NEC Corp., Network Appliance, Sequent Computer Systems Inc., Siemens Computer Systems, Silicon Graphics Inc., Storage Technology

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September 22-24, 1999
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October 26-28, 1999
New York Marriott
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Gartner Group Outlook

Speed to market fuels
E-Business outsourcing.

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E-Sourcing Options

New service models address
growing need for expertise.

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Get It Off Your Chest

Your outsourcing vendors
can do better if you speak
up.

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More...

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John Bace, Research Director at Gartner Group

The Honeycomb Marketplace:

A BORDERLESS ENTERPRISE IN A FRICTIONLESS MARKETPLACE

John Bace is research director for the Gartner Group. During the past few years he has observed the volatile market impacts caused by Y2K and E-Business. We interviewed him regarding the dynamic nature of E-Business outsourcing.

CW: How would you measure the growth of outsourced e-business development over the past year?

Bace: I have some Dataquest figures on how much money has been spent and what's projected toward professional services in the e-business or e-commerce arena in 1998. $8.5 billion was spent worldwide on IT professional services for e-commerce. One-half of that was spent in North America. With a 23.5% compounded annual growth rate, it should grow to about $24.4 billion by 2003.

CW: What's your gut sense about the growth that we're seeing, and how is that growth manifesting itself?

Bace: The e-commerce marketplace is one of the most frenetic in the history of IT. It's worse than Y2K ever was, and I spent almost two years doing research on service providers in the Y2K marketplace. It is so much more frenetic because people have the perception that they are already behind in the marketplace. You literally have people going out these days and trying to buy five pounds of e-commerce to get on board or to have something in place.

CW: How do you distinguish between e-commerce and e-business?

Bace: E-business is the sizzle on the steak right now. It really is much deeper and broader than e-commerce.

CW: E-business seems to be a more complete cradle-to-grave proposition, as opposed to e-commerce, which some people seem to think is already past.

Bace: Many people are treating e-commerce as nothing more than the Webification of the hub and spoke system. E-business is integral to the enterprise move

toward what I refer to as a honeycomb marketplace – a borderless enterprise in a frictionless marketplace.

CW: What are the current trends impacting the outsourcing of e-business and e-commerce?

Bace: If we're talking about pure outsourcing, probably speed to market. The need to do it as quickly as possible

CW: What are the primary reasons people are turning to outsourcing for e-business?

Bace: Many enterprises are

unable to develop these types of skills quickly enough, so you have to turn to outside people for help. Additionally, the other reason why people are

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SMARTsourcing Co-Sponsor Profiles

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Let Oracle Consulting show you how we can help your business expand markets, increase efficiencies, and retain customers.

Gopi Bala, Director, The Yankee Group

E-SOURCERS MOVE CLOSER TO THE CUSTOMER

Gopi Bala is director, management strategies research practices, The Yankee Group. As a team observer of the e-business scene, he has had first-hand experience dealing with both large and small companies moving into e-business and e-sourcing. He discussed his views on e-sourcing during a recent interview.

CW: *How do you define e-sourcing?*

Bala: The sourcing of Internet-related IT services is what we call e-sourcing. You've got traditional IT services, which range from consulting, to systems integration, to outsourcing, to traditional technical support. When you bring it into the Internet regime, you have new developments—Internet data centers, for example. In applications outsourcing, traditionally you had application development and maintenance, and managed application services. Now there is the ASP market, wherein the applications service provider leases or rents applications 'by the drink.' Couple it with Internet Integration Services and Internet based support and you have e-sourcing.

CW: *Please describe the application service provider model.*

Bala: It helps to look at it historically. Two types of outsourcing have worked traditionally with larger firms. In pure applications outsourcing, usually the customer's staff is acquired by the outsourcer. In a more 'managed' applications environment third-party service provider staff is brought in to augment existing in house staff/skills in maintaining those applications or adding new application functionality. Now, traditionally, organizations also viewed all applications as strategic and preferred to keep them in-house and not be taken 'off-premises.' There is usually a large financial investment in those applications. What the ASP model allows is for many applications to be actually owned by the vendor and provided on as needed basis for the customer.

CW: *Please discuss that.*

Bala: Leveraging the Internet as a delivery mechanism, this is a viable option for many companies that couldn't make the large up-front investments needed. There are benefits for both large and mid-size companies. This 'utility' model works when the

degree of customization needed to serve any one customer can be contained. With the application utility model, the user gets applications on tap and gives many customers a better total cost of ownership profile. They don't have to invest in the applications, they don't have to be blindsided by changes in technology—those risks are passed to the vendor.

CW: *Do they pay a retainer as well, or is it only for services rendered?*

Bala: There is a mix of contracts. There may be some retainer fee if the level of customization is high. It's a very new model, and the pricing strategies are just being tested in the marketplace

CW: *How rapidly are e-business firms developing the expertise they need to run their own businesses without e-sourcing?*

SMARTsourcing Co-Sponsor Profiles

ProNet
BUSINESS IT

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Who we are

ProNet Technology Partners, LLC is an exclusive IT outsourcing services provider founded upon principles prioritizing business ethics setting a standard of professional excellence only the most skilled and dedicated can uphold. Our mission is to earn our clients' trust and loyalty by delivering flawless IT solutions with an unsurpassed level of customer service. For over three years now, we have fulfilled this mission and our concentration on solving business problems earned ProNet our sterling reputation for consistently meeting or exceeding expectations.

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ProNet's hallmark of exclusivity is a passionate adherence to a code of honor enabling our clients to confidently reveal those marketing and technical strategies that set them apart from the competition. A working climate of security and freedom is ensured to those solutions our organization seeks to return world class in its core competencies during the global transition to the Internet Economy.

By Deed

ProNet provides turnkey solutions to automating business processes, and offers the option of offloading your entire IT responsibility. Right down to the nuts and bolts. Analysis of outsourcing initiatives is available through our Enterprise Outsourcing Services Group.

To our Marketplace

Among the most important benefits ProNet brings to the table is dynamic response to market conditions. We actively seek out proven, bleeding edge technical solutions to current business problems. Attend the Breakfast we're sponsoring at SMARTsourcing for a demo of Web-based technology offering our clients unprecedented speed, clarity, and flexibility when launching e-business sites. To help mainstream e-business initiatives, ProNet delivers efficient solutions to integrate your legacy and ERP systems.

By our Commitment

Together, ProNet Technology Partners bring solutions that conquer the challenges of competing and winning in the Internet Economy. We give you our word on it.

For more information, see our website at www.pronet-tp.com.

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Computer Horizons Corp.

Computer Horizons Corp. is a strategic IT services supplier with over 4,000 billable consultants and 55 offices worldwide. The company enables its Global 1000 customer base to realize competitive advantages though enterprise application solutions, e-businesses, customized Web development and Web enablement of strategic application portfolios. Specific offerings include Customer Relationship Management (CRM), e-business, network services, ERP, strategic outsourcing and managed resourcing, as well as a best-of-breed selection of software and relational database products.

Computer Horizons offers an integrated "Market Leadership" approach to transforming its clients into the modern e-business world. The approach combines our various talents of our Strategic Emerging Practices organization, i.e.: CRM, e-Business, ERP, Outsourcing, and Managed Resourcing. CHC solutions are designed with combined synergy to provide total integrated solutions that enable clients to gain competitive and operating advantage.

With the understanding of information technology and the contemporary information management system, Computer Horizons has built a very strong set of service offerings, designed to meet the needs of large business organization, now and into the future. These offerings have been successfully marketed to the world's largest financial institution, the world's largest insurance company and the world's largest telecommunications service provider.

Businesses around the world are facing more obstacles than ever before. To succeed in this new business climate, companies should bolster their strengths, and focus resources on core competencies to ensure increased shareholder value. Conversely, companies should entrust decentralized and mission critical operations—such as information technology—to business partners with the expertise and experience to upgrade and maintain functions into the future.

As one of the country's foremost diversified information technology companies, Computer Horizons, led by a management team dedicated to client-driven objectives, has been serving as that kind of business partner both devising solutions and implementing them since 1969.

SMARTsourcing
CONFERENCE & EXPO SERIES

About BrainStorm Group

Based in Northboro, Massachusetts, BrainStorm Group, Inc. was founded in 1997 by Gregg V. Rock with the intent of establishing itself as the premier producer and developer of high technology conferences and events. In addition to the SMARTsourcing Conference, the YEAR 2000 National Symposium Series and the XMLundership Series, BrainStorm Group offers a set of integrated services in the areas of proprietary conference development and the outsourcing of content development, sales, event marketing and management for the high technology marketplace.

Visit our web site www.brainstorm-group.com for complete conference information from select presenters.

Gregg V. Rock
President & Founder
BrainStorm Group, Inc.
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BrainStorm Group's *SMARTsourcing™* Conference Series is the industry's premier meeting place for senior business and IT management to evaluate their strategic sourcing options with the world's leading IT Outsourcing and E-Business services and solution providers.

The *SMARTsourcing* Conference is the only industry forum which provides business and IT executives with a clear analysis of the newest sourcing models, as well as strategies for selecting and implementing the optimum mix of these services within your organization. Our unique 'open-industry' environment provides attendees with access to the industry's leading analysts, independent consultants, real-world case studies, and invaluable networking opportunities.

Life after Y2K

As organizations wrap up their Y2K preparations, thoughts quickly turn from survival to competition in the unforgiving environment of an Internet-enabled world. Leading organizations from across the country and around the world have attended the *SMARTsourcing Conference & Expo Series* to lay the groundwork for their post-Y2K initiatives. Plan to attend SMARTsourcing in order to leverage the latest sourcing models for your organization.

The *SMARTsourcing* Conference Program features presentations from industry 'thought leaders' on topics including: traditional IT Outsourcing services, Application Hosting services, E-Business services and more.

SMARTsourcing Solutions Guide

The *official publication of BrainStorm Group's SMARTsourcing Conference Series*. The second of this two-part series features insightful articles including:

▶ Gartner Group's John Bace, Research Director, addresses the dynamic nature of E-Business Outsourcing in *"The Honeycomb Marketplace: A Borderless Enterprise in a Frictionless Marketplace."* Page S-3

▶ Capt Bala, Director, Management Strategies Research Practice, The Yankee Group, discusses the e-sourcing landscape in *"E-Sourcers Move Closer to the Customer."* Page S-5

▶ William M. Ulrich, president of Tactical Strategy Group and SMARTsourcing Co-Chairman, identifies additional tips for leveraging your relationships with current strategic partners in *"Challenge Your Outsourcing Vendors."* Page S-9

▶ An overview of our upcoming conference programs can be found on the facing page. Visit our web site at www.brainstorm-group.com for complete conference agendas, list of presenters and audio overviews.

Special Thanks

The SMARTsourcing Conference Series has become a reality thanks to the support of our Event, Media and Analyst Co-Sponsors, which you will find recognized throughout this Solutions Guide and our web site. Additional thanks goes to our presenters and Executive Advisory Board Members (see page S-7) whose expertise and insight has been integral in establishing the *SMARTsourcing* Conference Series as a must-attend forum for IT Sourcing professionals and practitioners.

Come join us for some BrainStorming.

An Unparalleled Conference Program

BrainStorm Group has brought together the world's leading IT Outsourcing and E-Business experts to provide you with winning strategies for incorporating SMARTsourcing™ into your organization. No sales pitches, no fluff—just the information you need to make an informed decision. The SMARTsourcing Conference Series is committed to providing you with unbiased information on the latest sourcing options, trends, and developments.

Program Highlights

SMARTsourcing Strategies:

- Launching a Successful Engagement
- Gaining Business Advantage
- Managing Partner Relationships
- Successful Pricing Strategies
- Services in a Changing World
- Creating Winning Service Level Agreements
- Ten Imperatives for Future Success as a CIO
- Realigning IT with Business Strategies
- Managing Offshore Relationships
- Creating Core Outsourcing Policy

Latest SMARTsourcing Trends:

- E-Business Solutions
- CRM Outsourcing
- ERP Outsourcing
- Application Hosting and ASPs
- Business Process Outsourcing
- Application Development Outsourcing
- Maintenance Outsourcing
- Application Modernization and Legacy Renewal

Case Studies

Additional Presenters include:

Chris Campbell
Director of Sourcing Strategies
Gartner Consulting

Bill Martorelli
Vice President of Application Resourcing Strategies
Hurwitz Group

Wendoll O. Jones
Author of Outsourcing Information Technology Systems and Services

Oakie Williams
Author of Outsourcing: A CIO's Perspective

Stephanie T. Moore
Director
Giga Information Group

Andrew Filipowski
President
divine InterVentures and former CEO, Platinum Technologies

Attendee Benefits

Our conference program will provide insight and education on the strategic advantages of SMARTsourcing, explore winning sourcing strategies, redefine antiquated images of "outsourcing", and present the business imperative for the strategic implementation of project sourcing as a way to leverage an organization's IT investment.

Attendees will receive:

- Admission to In-depth Working Sessions and the Exposition
- Evening Networking Receptions and Co-Sponsor Hospitality Suites
- SMARTsourcing Solutions Directory
- Discounts on IT Outsourcing Research Reports
- Conference Attendee List
- Complimentary Issues of Leading Publications
- Complimentary SMARTsourcing Welcome Package, Show Guide and Proceedings.

Conference package also includes: hosted luncheons, coffee breaks, receptions, & special discounted room rates.

Who Should Attend?

Chief executives, operating, financial and information officers, divisional and business unit managers responsible for the evaluation, selection, purchase of IT services and the management of these relationships. Make plans to attend SMARTsourcing if you're looking to:

- Gain a comprehensive understanding of services available for E-Commerce, E-Business, Application Hosting, and CRM initiatives.
- Hear from experienced outsourcing veterans like DuPont, Michelin Tire, Amoco, Dr. Pepper, UTC/Carrier, UBS AG, Clarent, Bell Canada, United Airlines, 20th Century Insurance, CCC Information Services, Household International and others.
- Gain expert insight from industry "thought leaders" on the latest developments and advantages of IT Outsourcing.
- Network with your peers from organizations across the United States and the world.
- Learn about the latest tools and metrics available to measure value created through IT Outsourcing.

E-Business Services *BRIEF*

Leveraging Your Legacy Systems for E-Business

With careful planning, old systems can be taught new tricks

Stephanie Moore is Director, Giga Information Group, in Cambridge, MA and one of the leading experts in Y2K remediation. We interviewed her on the issues surrounding the use of legacy systems in e-business environments.

CW: What are the primary issues related to leveraging legacy systems in the e-business world?

MOORE: Companies have spent the last several years and significant amounts of money renovating mission-critical legacy systems for Year 2000 compliance. As they finish up these projects, they realize a couple of things. One is that there is now a huge 2pplication backlog that must be dealt with, and the other is optimizing the Internet as a competitive weapon. So, to rapidly deal with the application backlog and to take advantage of the cost benefits associated with the Web, many organizations are attempting to leverage, rather than rewrite their legacy systems by extending their reach and their use. Rewriting legacy applications from scratch takes too long, costs too much, and in some cases, requires a whole new set of skills.

CW: Are some of these pre-ERP systems?

MOORE: Sure. A lot of companies are saying, "I have this old mainframe that contains years worth of critical data. Given my time constraints, how can I get this system out to the Web so that my customers can have access to it? Or how can I use it to take orders on-line, so that the customers can serve themselves? I don't want to rewrite this huge system but maybe I can extend it or reuse parts of it."

CW: What's the answer? What can they reuse?

MOORE: There is a plethora of options, starting with some more tactical, browser-based, screen-scraping techniques that will enable companies to give external customers access to these legacy systems. Previously, these systems were only accessible to internal users, and generally, a smaller group of internal users. Now these technologies that allow companies to take these systems and safely deliver them not only to all internal users, but to external customers as well. At a more strategic level, companies can extract and reuse important logic from their legacy systems. These extracted components can be wrappered and reused to new applications development so that this legacy functionality doesn't have to be recreated.

CW: What are some of the pitfalls that users encounter in this kind situation?

MOORE: One of the big problems with these types of scenarios is that companies will sometimes find a tool or a technology solution and look for a business problem to solve using the technology. Companies should instead be taking a business driver—cost initiatives, customer relationship management, systems consolidation—and mapping that to a technology solution.

CW: Provide an example of a business driver for legacy renewal.

MOORE: An important and common example of a legacy renewal business driver is simplifying and expediting system consolidation. Many companies find themselves with a variety of business systems gained through acquisition or merger. It is not unusual for these systems to be performing similar functions for different companies to the corporate net. So, they are attempting to determine which systems perform which key business functions, which of these functions are duplicated, and which systems have the best structure for combining. They are then planning to extend systems to deliver all the capabilities that were previously duplicated. By analyzing and renewing the important business logic from each, companies can more easily merge the relevant pieces of each system into one without building in entirely new systems.

CW: In the course of renewing their systems for Y2K, have a lot of users had the foresight to build in e-commerce-type capabilities?

MOORE: That's an excellent question. And I must say that early adopters—the Y2K be?s who worked on these projects early enough—fixed their systems more strategically than the laggards. In many cases, they cleaned up their code, eliminated redundant code, developed appropriate test environments and documented their systems and their efforts appropriately. Some of them used repositories to store critical system information which could be used later for such things as data warehousing or new system development.

CW: As a result of their foresight, what current advantages do these companies have?

MOORE: These companies are now in a great position to leverage their Y2K legacy renewal efforts.

They've got the base, and their code is structured and lends itself to componentization. They've got information about the code and its relationship with the data. They also have documentation. This means in some cases that they will be able to separate the precautions logic from the application and data access logic. So, for example, if they just want to replace their existing interface and rewrite it at Java, they are able to strip away the old interface logic and implement new logic.

CW: What other critical issues are there to consider?

MOORE: Skills are another big issue. Most companies have in-house IT staff with skills, such as COBOL programming capabilities, that allow them to maintain and develop their legacy assets. Many companies, however, do not yet have Internet/Web development skills, or distributed application development skills. As a result, building an e-business system from the ground up be an entirely new environment is extremely difficult because they need to either acquire these skills, or retrain their legacy programmers. This will add additional costs as well in time to any e-business development project.

CW: What does all this cost?

MOORE: It really depends on the projects, and the projects are so diverse. What I consider interesting about many of these projects—particularly the interface redesign or extract types of projects—is that they are not extremely expensive; they do not require legions of programmers and they are very quickly implemented.

CW: If you could only give one piece of advice to companies who are in the position of trying to leverage their legacy systems to the e-business world, what would it be?

MOORE: Identify your business driver and your business goal. Then, map that goal to some of the technologies that are available. There are a lot of technologies that can deliver extremely high point tools. And, many of these technologies are good. However, you need to know your requirements before you even begin to investigate whether the solutions are suitable for your organization.

William Ulrich of Tactical Strategy Group says:

CHALLENGE YOUR OUTSOURCING VENDORS

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To fully capitalize on an outsourcing contract, you may need to re-evaluate the factors that motivated your decision to outsource in the first place.

Are you offloading an IT function that has become a headache? Are you seeking multi-year cost reductions? Maybe management wants to refocus on core competencies that no longer include IT. Tactical factors should not be pursued to the exclusion of long-term opportunities. Define how you want to leverage IT and challenge your outsourcing vendors to get there.

Outsourcing vendors offer value beyond knowing aggravation levels and short-term cost savings. Opportunities for leveraging vendor agreements are often overlooked. Consider a five-year maintenance contract, inked in 1996, that shifted support to an outsourcing vendor. Typical service level agreements (SLAs) from that era omitted language dealing with the Year 2000 issue.

As a repeated solution to this dilemma, one vendor sent systems offshore to be fixed. The code was returned riddled with errors, forcing the vendor into a last-minute remediation project. The client, the vendor and the client's customers were exposed to risks by this short-sighted decision.

You face two key challenges when crafting an outsourcing contract: to anticipate changes in the business and technical landscape and build these changes into the SLA, and to consider personnel issues. Say a company wants to hire consultants to maintain its Cobol systems while launching an in-house project to web-enable key business functions. It makes more sense to build the web-enabling requirement into the maintenance contract and transfer in-house personnel to the vendor's payroll. This approach gives the vendor the skills to maintain the existing systems and the knowledge needed to web-enable the legacy environment. The vendor gains the flexibility and economies of shifting skilled personnel into areas where they are best suited. Meanwhile, a project originally

designed to dump a maintenance head-ache now delivers bottom-line value to your company.

Outsourcing vendors can offer tactical and strategic value under a single SLA. Short-term deliverables include re-documented systems,

rationalized data definitions, a data warehouse and web-enabled functionality. Long-term value includes redesigning core data structures, transforming functionality into web-oriented environments and replacing legacy systems with packages.

Many vendors segregate outsourcing, ERP, Internet and other services into separate offerings. But creating a comprehensive RFP that integrates a set of requirements should address this issue. If you challenge vendors to provide comprehensive solutions to short-

and long-term requirements, they will respond. All you have to do is ask.

William M. Ulrich is president of Tactical Strategy Group, Inc., strategy planning consultant, author and co-chair of the BrainStorm Group's SMARTsourcing and YEAR 2000 conferences.

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BFL Software

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BFL Software is one of the fastest growing software companies in the business of providing software solutions to a client base across the globe.

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BFL also offers its expertise in current technologies like Systems Software, Client/Server Computing, Networking, Internet and Internet Applications, Object Oriented Programming, and ERP implementation solutions. It caters to the most advanced requirements of some of the leading companies of the world. It also provides solutions in the area of Re-engineering and migration of applications running on mainframes for Year 2000 and EMU compliance using some of the latest tools and techniques.

BFL has excellent dedicated offshore development centres for many of its clients in Bangalore, India. These centres boast of state of the art hardware and the latest software development tools, compilers and databases. The centres have multiple high-speed data communications links, including five dedicated ones, enabling its engineers and clients to constantly interact with its customers who include large Fortune 500 multinational corporations. **BFL Software has specialized in establishing Dedicated Development Centres using its unique Cooperative Onsite Offshore Methodology.**

BFL has offices in Sunnyvale, Memphis, Houston, New Jersey, Chicago, Toronto, Singapore, London, Sydney and a representative office in Japan.

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BFL Software believes in building lasting relationships with its customers to provide quality software services as effectively as possible.

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Silverline

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Silverline Technologies, Inc. "Silverline" is a leading provider of global information technology services and solutions. The Company offers a broad range of IT services, with the ultimate goal of being its clients' "partner of choice". Silverline's service offerings include: (i) application development and maintenance; (ii) system re-engineering & migration; (iii) turn-key project management; (iv) technical staffing; and (v) product customization. The Company delivers these services to a variety of technical environments including client servers, mainframes, year 2000 ("Y2K") solutions, internet/web development, products and enterprise resource management systems ("ERM").

The Company has a proven track record of building mission-critical applications for its clients. Silverline's clients depend on effective software development and system implementation to respond to rapidly changing requirements that meet changing regulations, schedules, and cost constraints. The Company considers its seamlessly integrated offshore development model in conjunction with its "value chain" business model to be its key strategic advantage. The Company's operations in India enable it to provide accelerated and more cost-effective software development and maintenance through 24 hours a day, 7 days a week ("24/7") availability of software developers.

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Headquartered in Piscataway, NJ, the Company has more than 1,000 employees worldwide. Additionally, Silverline maintains two U.S. offices: Oakbrook, Illinois and New York, New York. The Company's offshore software development centers are located in Mumbai, Thane and Chennai in India. These facilities are all connected via Silverline's dedicated state-of-the-art satellite link with internet, voice, video conferencing and data connections.

Editorial by COMPUTERWORLD's Enterprise Business Solutions Unit | www.brainstorm-group.com | S-9

A BORDERLESS ENTERPRISE . . .

turning to outsourcing is that the tools are already built, they are replicable and they are proven solutions. It's just a matter of customization. The third reason is that the end-user organizations don't know what kind of response to their e-commerce programs they are going to experience. Therefore, they like the outsourcers, the vendors who work in this space, because they have the ability to scale very quickly, to increase capacity if needed when a company takes off.

Think strategically. Push the limits of the envelope.

CW: Is it a likely that people will outsource initially and then hire people to run their e-business systems internally after they are up and running?

Bace: That would be the solution, once companies discover that e-commerce is a critical part of their business. Other people are looking to stick to their core businesses and never really acquire that kind of capability in-house. One vendor told me about a start-up airline in the southwest part of the U.S. that has an IT department of only five people. They are virtually outsourcing everything. Not only are they getting the tickets and reservations done, but they're also doing e-commerce by selling tickets over the airwaves.

CW: It seems like a pretty daunting task to assemble all the right components into an outsourced e-business development team.

Bace: It is a daunting task and there are some horror stories that are already coming out about firms that enjoyed a wonderful Internet Christmas last year. They developed a Web presence. They sold some items on the Web, and they increased their brand recognition, which was good. But their systems were literally reduced to producing a sheet of paper that somebody had to manually enter into their backend order-entry system. There were additional problems with some of these new systems, in that they disrupted enterprise logistics forecasting systems. This happened because they were not used to dealing in ones and twos-at-a-type orders.

CW: What advice would you have for users who are on the cusp of moving into this area?

Bace: Think strategically. Push the limits of the envelope. Don't just blindly pull a catalog or an order entry system. You have to move well beyond

that to reach the things that can change the way you do business.

CW: What advantages, if any, are there in sitting back a year and waiting for advances in e-business technologies and methodologies?

Bace: There are none. As a matter of fact, it could be substantially damaging to the health of your enterprise. Internet time is what society's business runs at today, and the organization needs to move quickly—but if necessary, in

smaller steps. There is a need to rapidly prototype a pilot and then move it into production after it's proved itself. If you sit back and wait for the dust to settle, the dust will probably settle on top of you. ■

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This commitment to excellence is further exemplified by Satyam's trademark way of doing business, known as RightSourcing. The methodologies of RightSourcing are simple, yet effective: Put the right service and the right solution in the right place at the right time. This means IT projects are conducted at the client site, at a Satyam development center or at a combination of both, and are always customized to meet a client's current and future IT needs.

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Cognizant Technology Solutions Corporation is a leading applications outsourcer that provides software development and maintenance services for Fortune 1000 companies. Cognizant partners with its customers to handle full life-cycle application development projects, and takes full responsibility for on-going maintenance of client systems and legacy transformation. Cognizant's core competencies include legacy and client/server systems, web-centric applications, data warehousing and component-based development.

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To ensure that their work is of the highest quality, Cognizant utilizes its ISO 9001 certified Online methodology to define and implement projects; and in December 1998, Cognizant became one of only 18 software engineering organizations worldwide to be assessed at SEI/CMM Level 4.

Using Cognizant facilities, customers can undertake additional projects without investing in new hardware or software and can parallel-process development phases to accelerate delivery.

Cognizant Technology Solutions Corporation is a subsidiary of IMS Health, the leading provider of information solutions to the pharmaceutical and healthcare industries worldwide. Global revenues in 1998 were $58.6 million. Originally formed in 1994 as the in-house technology development center for The Dun & Bradstreet Corporation, the company was named Cognizant Technology Solutions in 1996, when Dun & Bradstreet formed the Cognizant Corporation to provide insight into three fast-growing sectors: healthcare, media and technology. With the continued growth of these sectors, Cognizant Technology Solutions made an initial public offering in June 1998 (NASDAQ:CTSH). In July 1998, Cognizant Corporation evolved into two separate entities: Nielsen Media Research and IMS Health. IMS Health retains a controlling interest in Cognizant Technology Solutions.

Headquartered in Teaneck, New Jersey, Cognizant Technology Solutions now has seven offshore software development centers in Madras (4), Calcutta (2), and Pune (1), India. Cognizant also has sales and business development offices located in Chicago, San Francisco, Toronto, Canada and London, England.

E-Sourcers Move Closer...

Bala: In my view there are very few leading edge companies today in industries such a financial services, that have the requisite in-house expertise. E-sourcers are positioned to provide needed expertise over the next three years as demand explodes. Companies are responding to their needs by either acquiring 'soup to nuts' outsourcing services such as an ASP, or building an Internet strategy, which requires them to develop their Web infrastructure or an e-commerce infrastructure, leveraging the help of 'best of breed' e-sourcers. Most large and even mid-size firms require the services of an Internet integrator and in our view given the paucity of tested talent (and Y2K preoccupation), e-sourcing is almost mandatory for every company today. Very few companies have the right skill set internally, especially in the area of developing a competitive web strategy.

CW: *What is the timeframe for the projects that are being e-sourced?*

Bala: We're looking at projects that could span from six weeks to three months at the low end, to perhaps a year or two at the high end. Typically the longer lifecycle projects are broken into manageable parts, and there is perhaps a clearer understanding of deliverables and costs. Its also an iterative approach to delivery that starts separating the 'doers' from the 'talkers', and there usually is a greater appreciation for shared risks and rewards with the Internet integrator, working hand-in-glove with the both customer's technology function and lines of business.

CW: *Describe more aspects of e-sourcing.*

Bala: Continuing on to Internet integration. We're not talking about an operating environment, we're talking about a project environment starting with developing a Web site and putting an e-commerce application in place. Or, the e-commerce application may already be there and tested. Either way, the value of the implementations are not really there until applications are integrated back to the technology and people infrastructure—including data marts and data warehouses—as well as the bread and butter operational systems such as human resources, finance and manufacturing. Firms also intrinsically become more valuable when e-sourcers help integrate using the web—those implementations that they customer's customer and supplier's technology and people infrastructure.

CW: *E-business is a rapidly moving target. What questions should you ask potential e-sourcing partners?*

Bala: You definitely want to know what their experience base is. Many of the newer, innovative companies have fairly limited integration experience, but their experience is very well focused in the areas of Web development or e-commerce application development and maintenance. Don't count on deep client-server or legacy skills in mainframe technologies. It's important to know what the industry-specific experience is. It's important to know if they have an understanding of your business strategy within the context of your industry. They should also understand your competition. The management consultance and business architectural elements are much more deeply infused with the actual implementation than was in the client/server and mainframe legacy regimes. You might have business and technical strategies being offered by separate consulting companies in the past, but the prospective e-sourcer has to have both. Technical depth/breadth, practice and/or data centers and financial viability would be important elements of due diligence. Price would be lower down the list ∎

Editorial by COMPUTERWORLD's Enterprise Business Solutions Unit   www.brainstorm-group.com   S-11

Will your IT team ever escape
the "day-to-day" and focus
on your strategic goals?

Integris

Electronic Whiteboards

Capture your marker strokes

BY HOWARD MILLMAN

GETTING STARTED with MicroTouch's Ibid whiteboard is a bit easier than with Virtual Ink's Mimio — you just start drawing. No assembly is required

WHEN YOU NEED TO transmit visual information to a group of people, don't ask them to write and listen to you at the same time. With an electronic whiteboard, you can write it down for them. Electronic whiteboards significantly add to the versatility of traditional whiteboards by automatically capturing the information

that you write, converting it into an electronic signal and transmitting it to an attached computer as a graphical image.

Buying one makes the best sense if you do a lot of ad hoc brainstorming that prevents you from preparing your material in advance. However, if you can use slides or overheads, do that instead of using an electronic whiteboard. It will cost less and look better, and fewer things can go wrong.

I tested electronic whiteboards from Virtual Ink Corp.

and MicroTouch Systems Inc. and found both easy to use and even fun, sort of like a giant Etch-A-Sketch. Virtual Ink's Mimio and MicroTouch's Ibid boards achieve the same result, but they do it in considerably different ways.

In my opinion, the Mimio is a clear winner because of its small size, light weight and ability to transform any hard surface into an electronic whiteboard in seconds.

"Virtual Ink made using electronic whiteboards

practical, especially for work-group-level collaboration, where the users are remotely located," says Mike Comisky, an analyst at International Data Corp. in Framingham, Mass. "Before the Mimio, the boards were cumbersome, sometimes difficult to calibrate and just not worth the effort."

If you travel, I strongly recommend Virtual Ink's clever Mimio because of its easy portability. It weighs less than 2 lb. and folds into a compact, 12-in.-long cylinder. Micro-Touch's Ibid 50, its new 1- by 2-ft. portable unit, weighs a shoulder-sapping 12 lb. and doesn't fold. For intrabuilding use, when built or weight isn't so much of a factor, the Ibid 50 is a suitable choice. ►

Millman is a reviewer and consultant in Croton, N.Y.

Mimio

Virtual Ink Corp.
www.virtual-ink.com
$499

Virtual Ink's Mimio, unlike Micro-Touch's Ibid, isn't actually a whiteboard. It's a 24-in.-long "capture bar" that attaches to an existing whiteboard — or any flat, hard surface — with suction cups. I selected the Mimio to a piece of opaque glass, and it worked fine. A 10-ft. cable connects the capture bar to a computer's serial port.

The Mimio performed well the writing on the whiteboard is captured accurately and almost instantaneously on the screen (a surface of up to 4 by 6 ft.) and in the mark- or color you select.

If the computer is on a network, you need it to offer users over the Internet in real time. For larger groups, you can route the signal through the computer into a projector to display it on a screen up to 24 ft. high.

The Mimio uses infrared and ultrasonic sensors to capture your hand motions as you write on the board. You use the Mimio's special marker jackets that slip over standard colored markers and change them into signal-generating devices. You activate the signal by pressing on the marker's tip as you write on the whiteboard. The color of the ink depends on the color of the jacket.

Mimio's software works much like a simple drawing program. It's easy to install, learn and use. It enables you to readily, save and print images. Installation of the software and configuration of the bar take about 15 minutes.

Ibid 50

MicroTouch Systems Inc.
www.microtouch.com
$499

Unlike the Mimio, the Ibid 50 is actually a board. As you write on its touch-sensitive surface, its embedded electronics capture your pen strokes and send them as commands to the computer. The set of articles permanently or temporarily to a wall or as it on an easel, which is optional.

Getting started with the Micro-Touch whiteboard is a little easier than with the Mimio — you just start drawing. There is no assembly required. As with the Mimio, the Ibid whiteboard transfers data almost immediately to the computer screen and allows excellent control over its appearance.

For example, you determine the color of the text sent to the computer by just pressing a color key on the unit's control panel.

Models are available in a variety of sizes, up to a 4- by 6-ft. unit that lists for $2,499.

However, the standard Mimio can scan the same size board and costs one-fifth as much. If you plan to share the data on the board with colleagues at their computers, think carefully about how large a board you want. Yes, you can fill 24 square feet with text and graphics, but think how Byzantine that would look when shrunk to fit a 17-in. computer screen.

The Ibid software is similar to the Mimio software. Both display the familiar Microsoft interface, with a menu bar and tools bars that duplicate the control panels on the whiteboard. You can save and print, as well as cut, copy and paste. But remember, the data you're manipulating isn't text; it's an image, which loosens it usefulness.

VIRTUAL INK's MIMIO isn't a whiteboard at all. It's a 24-in.-long "capture bar" that attaches to an existing whiteboard

Tool Command Language

BY FRANK HAYES

From its name, the Tool Command Language (Tcl) might sound like it belongs with the saber saw and the electric drill. But a glue gun is probably a better image. This free scripting language has proved itself a handy way to string together existing applications — and may have an even stronger future on the Web.

Unlike conventional programming languages such as Cobol and C++, Tcl wasn't designed for building large, fast, compute-intensive programs. Instead, a Tcl program — called a script — routes data from one program to another. The larger, faster programs do the heavy lifting; the Tcl program ties them together.

Creating Value

The ability to leverage existing programs means you can create a lot of value with something small and efficient written in Tcl," says John R. Rymer, president of Upstream Consulting in Emeryville, Calif.

The programs that Tcl can leverage include relational database managers from Oracle Corp., Sybase Inc. and Informix Corp. and command-line programs that can input and output text. And because Tcl was specifically designed as a "glue" language

— not intended to write large, stand-alone programs — developers have created a wide variety of Tcl extensions for functions such as generating graphs, charts and 3-D graphics.

Tcl's most widely used extension is a graphical user interface (GUI) tool kit — called Tk for short. Tk includes buttons, menus, scroll bars and other graphical widgets. The 500,000 to 1 million programmers who use Tcl with Tk — according to the trade group The Tcl/Tk Consortium — can create GUI-based programs that serve as front ends to other programs or string together several programs.

In fact, the same Tcl script written using Tk will look like a Windows application on a PC, a Macintosh application on a Mac and a Motif program on a Unix workstation.

There's a price to that flexibility, of course. Like other popular scripting languages, including Perl, JavaScript, VB-script and Rexx, Tcl is an interpreted language. The computer must decode and execute a Tcl program one line at a time, so it runs more slowly than a program written in a compiled language such as C++.

But Tcl programs can be written quickly, says Phil Costa, an analyst at Giga Information Group Inc. in Cambridge, Mass. "It's a good way to tie together different systems or to do quick hacks that don't require the ultimate in performance," he says.

No Number-Crunching

In addition, Tcl wasn't designed for manipulating numbers, and its simple design makes complex program logic difficult to create. "For things like transactional capabilities or business rules, you need other languages," says Joshua Wallet, an analyst at Forrester Research Inc. in Cambridge, Mass.

On the other hand, Tcl is simple enough that it can be built directly in to more complex applications, to serve

as a scripting language.

Another key advantage for Tcl is the language's ability to handle text input. That has made Tcl popular for use in

generating images and pages on the fly on the Web.

And that capability may make it still more popular in the future, thanks to Extensible

Markup Language (XML). XML is a textual format for data, points out Rymer. And as XML grows in importance, Tcl should grow right with it. ▸

Q&A

Scriptics CEO John Ousterhout Talks About the Tcl Scripting Language

Tcl creator John Ousterhout, who is CEO of Scriptics Corp. in Mountain View, Calif., spoke with *Computerworld* about the strengths and weaknesses of the programming language.

Why did you create Tcl?
Aren't there enough computer languages already?
I originally created Tcl as a command language for applications my graduate students and I were building at [the University of California at] Berkeley. What I wanted was an interpreted language that could be embedded inside an application and meld with the features of the application to provide a powerful command-and-extension language. Furthermore, I wanted to be able to use the same basic language in many different applications. There was no existing language that could serve this purpose, so I created Tcl.

What makes Tcl better than other scripting languages?
Tcl's greatest strength is its ability to work with devices or applications to control them, automate them, and integrate them with other resources. This comes from two key features of the language: embeddability and extensibility. I mentioned embeddability before. Extensibility means that Tcl provides [programming interfaces] you can use to create new features in the language by writing code in C, C++ or Java. People have written thousands of extensions for Tcl, such as Tk, and hundreds of them are available freely on the Internet.

Embeddability and extensibility

John Ousterhout is no dummy when it comes to Tcl — he created it

make Tcl a wonderful platform for automating and extending things. It's easy to put Tcl anywhere. [to] create extensions that allow Tcl to communicate with things you want to control, then write Tcl scripts to automate those things and integrate them with other things in your environment.

One of Tcl's distinctive features is the Tk tool kit, an extension that allows you to create graphical user interfaces [GUI] by writing Tcl scripts. People have found that they can create GUIs five to 10 times faster with Tcl/Tk than with other approaches.

Any notable drawbacks?
Tcl has not been a strong performer, such as interfaces to [enterprise resource planning] systems. Tcl should also use better development tools. Until a few years ago, there were essentially no development tools for Tcl. At Scriptics, we've created a tool set called TclPro, which is a good start. But even more tools are needed in the future, such as performance analysis tools, test coverage and a graphical interface builder for Tk.

What kinds of practical applications is Tcl being used for?
Tcl is used for a huge variety of applications, but most of them have an integration flavor. On the Web, Tcl is used at high-end Web sites such as AOL's Digital City and Travelocity, where it creates dynamic Web pages

When is Tcl for? Can it really be used by nonprogrammers?
Tcl is probably the easiest scripting language to learn. Often, what happens is that programming wizards create a Tcl-based system by writing extensions or embedding Tcl in an application. Then more casual programmers write Tcl scripts for their system. For example, at AOL, the casual programmers are Web content creators; at Cisco, the casual programmers are test engineers; and at Motorola, the casual programmers are factory automation experts. — *Frank Hayes*

AT A GLANCE

Tcl Resources

www.scriptics.com
The Tcl/Tk Consortium, a nonprofit group promoting Tcl/Tk

www.scriptics.com/resource
Scriptics Corp. Tcl Resource Center

www.scriptics.com/resource
The Santa Cruz Operation Inc. Tcl info page

Tcl and the Tk Toolkit
Addison-Wesley, 1994. The definitive description of the language by Tcl creator John Ousterhout

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PLOTTING AN OPEN-SOURCE PATH

Although open-source software can be a low-cost, flexible choice for IT organizations, opponents are quick to point out the limited support and lack of applications

By Christopher Lindquist

T
HOUGH IT CAN SOUND like high tech talk for flower children or the sandal-wearing cabal of communism, open-source software can make good business sense if information technology managers are careful to weigh the pros and cons before starting a project.

Many companies make widespread use of open-source products — free software developed under a license that guarantees that users also get access to the source code — sometimes without realizing it. The Apache Group Web server, the Perl development environment and sendmail e-mail software are all open-source programs used by thousands of corporations. When it comes to open source as a corporate strategy, however, some companies may get edgy.

Open Source Defined

Part of the problem is that open-source software is often mistakenly confused with freeware. It's true that many open-source packages are free, but the two terms mean very different things.

Freeware doesn't provide access to source code, nor are users authorized to modify the product without permission from the author.

Definitions of open source vary somewhat, but in general, it means that a program's original source code must be freely available to anyone who wants it. Stricter definitions state that software can be called open source only if its license allows users to redistribute the software at no charge — though they don't prohibit charging for support or consulting services.

Open-source software may have humble, group-project roots, but it has produced some worthwhile products — including Linux. And an unusual license shouldn't be a reason to avoid it. "Software is software. If it does your job, and it works, then it's acceptable," says Greg Weiss, research analyst at D. H. Brown Associates Inc. in Port Chester, N.Y.

Weiss also notes that open-source licenses, in general, work more in favor of users than against them. "You really only have difficulties when you want to modify the [code] and redistribute it," he says. "Most companies aren't doing that."

Of course, the open-source community urges that you release any changes you make, even if you don't plan to redistribute the code. But once you get past the Sociology 101 language used by some adherents, there are compelling reasons to consider a move to open-source products.

The Reasons Why

Open-source advocates have a long list of reasons why it makes good business sense to consider open-source products. Among them are the following:

- ■ **Cost:** Open-source programs are usually free, though you'll have to pay for things like printed manuals, telephone technical support and consulting — if such offerings are even available — from the vendor.
- ■ **Peace of mind:** Many companies like knowing that they have the source code for critical software in hand. If the vendor goes under, you still have some chance of making patches and updates to the code.
- ■ **Security:** Arguments range, but fans say that because many people have access to open-source code, security holes are usually plugged in hours or days, not months, as can happen with traditionally licensed products from companies that may have overworked staffs who put bug fixes on the back burner.
- ■ **Flexibility:** Need a new feature? With open source code, you can write it yourself instead of waiting for it to be added to the vendor's list of future upgrades.
- ■ **Support:** The open-source community makes exceptional use of communications media like e-mail and

Usenet. If you have a question, it's likely to be answered with a search of the newsgroups. And as open source increases in popularity, large vendors such as IBM and Dell Computer Corp. in Round Rock, Texas, have begun to offer support options. Around-the-clock support organizations have begun to crop up.

The Reasons Why Not

Many commercial software vendors are quick to point out that open-source software does have its downsides, which include the following:

- ■ **Delayed development:** It's common for large vendors to get together and discuss future product plans years in advance of actual delivery. So when new hardware features like Universal Serial Bus (USB) or the IEEE 1394 (FireWire) bus arrive, supporting software usually hits at the same time or soon after. Open-source developers have yet to get in on the action. Only a handful of hardware makers offer Linux drivers, for instance. And Linux has yet to offer support for USB or complete compatibility with Plug and Play.
- ■ **Murkier future:** Software developed by a consensus of part-time programmers is unlikely to ever have the razor-sharp focus on the future that you'll get from a company like Microsoft Corp. Open-source software tends to follow trends: As developers find a use for something, they add the code. Commercial software can help define trends by creating uses and anticipating problems before customers even know they exist.
- ■ **Security:** The other side of the security debate is that with open source, a hacker could theoretically integrate dangerous code into a product and redistribute it to unknowing customers. This could be a problem with less popular products that aren't under the same scrutiny as things like Linux and Apache.
- ■ **Support:** Commercial IT vendors have long offered around-the-clock support contracts and certification programs. And if you need someone trained in Oracle8 or Windows NT 4.0, you can find one by calling any local technical school. Only a few open-source vendors have begun such services, and it's unclear how successful they'll be in the long term.
- ■ **More limited ease of use:** Open-source programs are created by developers — often for developers. As a result, graphical user interfaces and convenient configuration and administration tools often aren't available.
- ■ **Fewer commercial applications:** That argument is commonly aimed at Linux by Microsoft fans: There are far fewer commercial applications designed for use on open-source platforms, thereby limiting options when companies look for off-the-shelf products.

Decision Time

A move to an open-source product can't be taken lightly. Support is still sketchy compared with more established commercial software. Initial cost savings can be offset by other, less tangible expenses. For example, complete, off-the-shelf software packages for Linux are harder to come by than for Windows NT.

The trade-off can be time, says Weiss. "[Linux is] cheaper as an [operating system], but are you going to spend 20 hours digging up all the tools you need and getting them compiled and running for you?" he says.

If so, it — and other open-source programs — may not earn their keep. But, he adds, "when Linux does something equally well, the question is: Why would you pay for another operating system?"

For more information, check OpenSource.org for definitions, case studies and a history of open-source software. Articles also appear at Slashdot.org. ■

Lindquist is a freelance writer and reviewer in Moss Beach, Calif.

C++ Success Story

*Competitors have predicted its demise,
but use of C++ continues to grow*

BY TOM DUFFY

SOME OF THE BEST creations happen by accident. Others are the result of diligence and impressive foresight. For C++, which Bell Labs first offered to universities in 1985, in the latter category.

In 1979, a Bell Labs researcher named Bjarne Stroustrup wanted to write some simulation programs for himself

BJARNE STROUSTRUP, the creator of C++

and some friends. Simula67, which Stroustrup considers the first real object-oriented programming language, was too slow. Basic Combined Programming Language (BCPL) didn't have the abstraction facilities he felt were needed C, which was derived from BCPL, had the same limitations.

So Stroustrup decided to write a new version of C, which he called "C with classes." The language evolved and became more sophisticated, and in 1983 Stroustrup dubbed it C++.

From the outset, Stroustrup was determined that C++ achieve wide acceptance, according to Andy Koenig, a colleague of Stroustrup's and the author with Barbara Moo of *Ruminations on C++*. As a result, Stroustrup constructed C++ so that it compiled into C rather than into machine language. That allowed it to be used by anyone who already had a C

compiler, of which there were hundreds of thousands in circulation.

"Compiling into C made it possible for him to make it widely available," says Koenig.

Bell Labs first made C++ available to university users in 1985, with virtually no support. To get the word out, Stroustrup simultaneously published a book, *The C++ Programming Language*, which is now in its third edition.

It didn't take long for the language to find an audience. In 1987, 200 people attended the first C++ conference. The following year, more than 600 people attended, according to Koenig. By the early 1990s, Stroustrup estimates, the number of users was in the vicinity of 500,000, making C++ the world's fastest-growing computer language.

The beauty of C++ is that it allows programmers to make increasingly complex programs with ever more simple interfaces, according to Koenig. Today, C++ is the dominant object-oriented programming language as the basis for

software applications for everything from PCs to supercomputers. C++ has been written into AT&T Corp.'s transmission, switching and operations systems and is also behind much of the company's WorldNet Internet service.

Stroustrup, meanwhile, continues to work at AT&T Bell Labs, where he is head of the Large-Scale Program Research department and is heavily involved in the further evolution of his language.

"I remember three or four years ago somebody from Sun said that Java was so fantastic that he expected C++ to be dead in two years," says Koenig. "Now it's three years later, and the number of C++ users is still increasing." He says he attributes that to the fact that "you don't have to have a whole stable of tools, one for X and one for Y. It's a tool that is more than good enough for a wide range of applications." ◗

Windows Arrives

Despite a slow start, Microsoft claims market leadership

BY TOM DUFFY

The concept of windowing technology was born in a Xerox Corp. laboratory in the mid-1970s. But it took Microsoft Corp. to popularize it.

Windows was released in late 1985, more than a year after it was due. But it didn't arrive without problems. Version 1.0 was initially sluggish, primarily

because most of the installed base of computers didn't have enough power to run it. In addition, Windows required the use of a mouse, which most computer users weren't familiar with yet, and could contribute to lackluster sales.

There were other windowing technologies on the market at the time, notably IBM's TopView. But by 1987, when IBM announced it would begin selling Windows, it effectively conceded that Microsoft had won the competition for the operating environment.

Microsoft's eventual success with Windows secured its place as the dominant software company it is today ◗

Duffy is a freelance writer in Northampton, Mass.

1985

Main Street.* Quantum later becomes America Online Inc.

The National Center for Supercomputing Applications is established at the University of Illinois, Urbana-Champaign. Director Larry Smarr lobbies Congress to create four supercomputing centers around the country, linked by a high-speed network. The network will displace Arpanet as the driver in Internet development when Congress approves the funding. ◗

Four other national supercomputer centers are formed in San Diego, Pittsburgh, Princeton, N.J., and Ithaca, N.Y.

Whole Earth Catalog publisher Stewart **Brand** starts an electronic town meeting for the Whole Earth Learning Link, a.k.a. The **Well**.

Intel Corp. releases the **386** microprocessor. It features 275,000 transistors, more than 100 times as many as the original 4004.

Atari Corp. releases Gauntlet, a video game for multiple players.

Inmos Corp., the state-backed U.K. semiconductor company, launches the **Transputer** - a microprocessor specifically designed to be linked to other microprocessors for use in parallel processing.

Lotus Development Corp. releases **Jazz**, an all-in-one software package for the Macintosh that incorporates spreadsheet, database, graphics, word processing and communications applications. Jazz is expected to be the key to acceptance of the Macintosh in business but turns out to be a commercial flop.

Aldus Corp., founded by Paul Brainerd (at right), releases **Page-Maker**, the first desktop publishing program for

PCs. PageMaker can be used to write text, produce layouts, create illustrations and print documents or books.

Phrack, an electronic journal dedicated to hacking, is launched.

Robert Palmer joins **Digital Equipment Corp.** He becomes CEO in 1992.

Michael Cowpland founds **Corel Corp.**

Nintendo Co. introduces the home Nintendo Entertainment System.

By the end of the year, there will be 2,000 Internet hosts.

The **Tansy Tomato Co.** releases the Omnibot 2000, a 26-in.-tall robot that can move in two

speeds, greet visitors, pour drinks and carry objects.

Cray Research Inc. introduces the **Cray-2** (at left), dubbed the world's fastest and most powerful computer. The sites at which it is used include a NASA facility at Moffet Field in California and the University of Minnesota's Supercomputing Center, which are placed on Arpanet.

Symbolics.com is created the first registered domain on March 15. Other firsts are cmu.edu, purdue.edu, rice.edu, css.gov and mitre.org.uk.

Dr. Jack Copeland implants a **Jarvik-7** artificial heart in Michael Drummond.

Abbott Laboratories produces the first licensed test to detect the **HIV** virus.

— Compiled by Laura Hunt

Steve Wozniak leaves **Apple Computer Inc.** to teach computing. **Steve Jobs** also leaves Apple following a dispute with then-CEO John Sculley. Jobs starts **Next Computer Inc.**

Quantum Computer Services is founded by James V. Kimsey, Marc Seriff and Steve Case (at right) in Vienna, Va. The company launches **Q-Link** for Commodore Business Machines Inc. computer enthusiasts. Q-Link is a network dedicated to chat, e-mail and games. Case is quoted at the time as saying, "We know simplicity was the key. We had to divorce ourselves from some technical gobbledygook to strike a chord with

Love at First Sight

Philadelphia, the City of Brotherly Love, opens its arms to IT pros looking for big-city challenges at a saner pace

By Kim Fulcher Linkins

AFTER LIVING and working in New York for 20 years and dealing with a fast-paced, energetic, hectic lifestyle, Karen J. Hanson had had enough. She says the day after day of such a frenzied pace was exciting, but also draining. So she looked to make a change. Her search brought her to Philadelphia, the City of Brotherly Love, where the hand of friendship that Philadelphians extended to her helped her to call Philadelphia home.

"I think that we have the sophistication in terms of the IT challenges that you will find," says Hanson, director at Greater Philadelphia First Corp. "We're world-class IT in Philadelphia, but I think that the environment that you do it in is a lot more family-friendly and a lot more work/personal life-balance that you would get in New York."

Kenneth A. Nelson agrees with Hanson's assessment. The senior vice president and CIO at Aramark Corp., a food distribution company, describes the area's work environment as high-energy, results-oriented and pretty hard-paced. "If you're a person who wants to learn a lot quickly and get a lot of good exposure to a fast-paced environment, and you're in a growth mode, I would think [Philadelphia would] appeal to you," he says.

The Philadelphia area has many of the same needs for information technology professionals as the rest of the U.S., experts say but specifically

THE LIBERTY BELL: just one of Philadelphia's historical landmarks

needs people with Internet or Web specialties; object-oriented program development, Java, C++, Unix and Windows experience; Oracle database development skills; programming abilities in all languages; experience with integrated applications like SAP; e-commerce skills; and LAN and other networking skills.

Room to Grow

The hottest growth market in the area is for Internet developers. According to May's "Delaware Valley IT Hiring Survey," three of every four companies surveyed say they are looking for Internet developers, with 71% paying $50,000 per year or more. Specifically, the survey reports that programmers who can compile programs in Java are in huge demand, with salaries running at $70,000 per year or more in the area. The survey was conducted by the Triad Group at Texcel Inc., a recruiting firm specializing in finding qualified job candidates in IT.

IT professionals from various backgrounds should be able to find their niche.

"Greater Philadelphia is home to Fortune 500 companies, it's home to midsize companies, it's home to tiny startups," Hanson says. "I think that appeals to a lot of people, because you want to do different things at different points in your career."

Historically known for manufacturing, Philadelphia's economy has diversified in recent years to include industries such as insurance, financial services, chemicals, pharmaceuticals and biotechnology.

Many companies in the area are in a holding pattern until they can see how the year 2000 problem will work out.

"I predict that SCT Corp. will return to a more aggressive hiring pattern [that's] normal for the IT industry within the next year," says Susan Knoble, SCT general manager for workforce development. "Once Y2K has come and gone, we will see the market begin to shake loose, and sales should rebound strongly." Then, Knoble says, companies should be hiring IT workers at all levels.

For leisure time, there are plenty of recreational opportunities in Philadelphia. "Even in just the New Jersey, Pennsylvania and Delaware tristate area, you have the convenience of the seashore to take your children, you have a lot of amusement parks and museums, a lot of history in terms of Independence Hall and learning all about the Liberty Bell and our freedom," says Arlene Milano, project leader for SAP upgrades at Elf Atochem North America Inc.

In order to retain good employees, Hanson says, companies in the area are trying to help their employees maintain a balance in work and life.

Programs vary by company and can include in-house day care, telecommuting programs, flexible work schedules, tuition reimbursement, adoption reimbursement, unpaid medical leave and even a concierge service to help employees get personal tasks done during the day, such as dry cleaning or shoe repair.

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Sixty Miles From Philly: Atlantic City

THE ATLANTIC CITY BOARDWALK provides a workday diversion

If the history, job opportunities and attractions of Philadelphia still don't do it for you, a 62-mile drive southeast will take you to Atlantic City, which some information technology professionals say offers IT work in a vacation spot.

Donald Hoey, financial systems director of MIS at Tropicana Casino and Resort, says, "There's something to be said about living in a resort area."

Gaming is Atlantic City's major industry. Ron Baresi, a consultant at Showboat Casino and Hotel, says most of the casinos in Atlantic City are running AS/400s as their main platform. Therefore, there is a strong need for AS/400 skills. IT professionals skilled in Windows NT, server-based applications, programming and networking are also in demand.

A unique aspect of working in IT in Atlantic City is the need to be balanced by the state casino commission. "It involves disclosing some information to the state, and then they do a background check on you," Kreател says. "If you have skeletons in your closet, they will come out.

"Basically, any employee that deals with gaming has to be licensed by the state casino control commission," he says.

Baresi says he has found the salaries for IT positions in Atlantic City to be approximately 10% to 20% lower than in Philadelphia.

Kreател says it's a quality-of-life payoff. "It's kind of a big town business in a medium-size town," he says. "Besides, where else can you go to the beach at lunch time and still be back at work on time?"

— *Kim Fulcher Linkins*

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CheckFree	24.7
The Baan Co. NV	24.0

Comsat Corp.	-29.2
Renaissance Worldwide (L)	-13.3
Tech Data	-11.2
Priceline.com Inc. (L)	-9.0
Harris Corp. (L)	-8.8
Boxxyn Systems Inc.	-7.0
Sanguol Data Systems	-6.7

DOLLAR

Red Hot Inc. (IR)	91.60
eBay Inc.	24.25
NEC (R)	18.00
Yahoo Inc.	16.87
Intel	12.62
Nextel Communications (R)	11.75
BMC Software Inc.	11.37
Checkpoint Software Tech. Ltd.	10.34

Comsat Corp.	-7.81
Priceline.com Inc. (L)	-5.81
Micron Technology (L)	-5.00
Cisco	-3.62
GTE Corp.	-3.12
Allied Corp.	-3.06
Xerox	-2.94
Computer Sciences	-2.83

Gateway Aiming at Corporate Accounts

BY MATT HAMBLEN

IF YOUR company thinks of Gateway Inc. (NYSE:GTW) as just a place where consumers go to buy PCs, it might be time to think again. In recent months, the $7.5 billion company not only has undergone a change in name (formerly Gateway 2000) and corporate address (from South Dakota to San Diego), but has taken steps to increase PC and server sales to large businesses.

Those changes, put in place a year ago, helped the company's stock soar to a year-high $100 per share last week, prior to a stock split at the close of trading last Tuesday, analysts said.

Second-quarter earnings announced in July hit a record $89 million, or 56 cents a share, up 47% from the same quarter last year. Gateway has been ranked third or fourth in PC sales in the U.S. in the past few quarters.

"We've rated the stock a Buy throughout the year because the company has done a number of very intelligent things," says Charles Wolf, an analyst at Warburg Dillon Read LLC in

New York.

Wolf says a promising factor for Gateway's future is its savvy in bundling PCs with service contracts from Gateway.net, its Internet service provider arm. The provider has 400,000 subscribers, double the number it had a year ago, making it the 11th largest. None of the other major PC makers have been as successful in bundling Internet service, he adds.

In July, Gateway announced an alliance with GE Capital Information Technology Solutions in Newport, Ky., to offer products and services for IT operations in large companies.

Although unproven, several analysts say the alliance looks promising. Gateway will build equipment to order for Fortune 1,000 companies based on advice from GE, which will also provide worldwide service.

Overall, consumer sales at Gateway made up about 46% of its revenue last quarter, with 10% coming from large businesses. By comparison, Dell Computer Corp. (Nasdaq:DELL) has about 88% of its products to businesses and institutions.

Gateway isn't known as a server vendor, but last week it attempted to beef up its profile in that area by offering the Linux operating system on its ALR servers. And the 380 Gateway Country stores are now being staffed with business account representatives who will help small and midsize businesses set up systems and networks.

"One of Gateway's weaknesses was they needed to raise the profile in the business segment, and they are," says Andrew J. Neff, an analyst at Stearns Inc. in New York. He also rates Gateway a Buy. **▷**

Gateway Grows

Analysts rate Gateway a Buy because of new business and Internet efforts

Prices adjusted for stock split at the close of trading Sept. 7

How to Contact Computerworld

NEWS

Fraud Crackdown

we police our site and have strict agreements between buyers and sellers, who sign contracts up front," Score said.

Buyers on the site send payment for goods to Computerwork, which forwards the payment to the seller if all conditions of the sale are met.

Sellers sign legally binding agreements to ship their products to the highest bidder in the condition in which they were advertised.

EBay, by contrast, makes money from listings and doesn't get involved in the actual buying and selling of the 2 million items per day that its 5.6 million users buy and sell.

Policing the site for illegal items or other inappropriate material is left largely to users,

who can post their concerns to the site's community watch bulletin board. EBay spokeswoman Kristin Seuell said that's how the company learned of the kidney. Once it found out, it stopped the auction and suspended the posting privileges of the Florida user who put the kidney up for bid. It also notified the police.

"When we look back, we'll see this incident has helped to educate people in the eBay community about what our policies are, what actions we take and how closely we work with law enforcement," Seuell said. But even after the incidents, eBay has no plans to prescreen listings, she said.

Vain Thoughts

Others have very different ideas about the lessons the incidents have taught.

"The lesson to be learned from eBay is that if the [online]

auctioneer is not taking any responsibility, it becomes a freefor-all," said Score.

"The reason this auction got attention is that it was for a human organ. What if it were for bootlegged software or a stolen car? No one would know the difference," he said.

Buyingedge.com Inc., which runs a so-called reverse online auction service through which buyers post orders for goods and sellers bid on the items, uses a combination of business processes and information technology to prevent the sale of illegal items online.

The site provides buyers with formatted electronic order forms for goods in specific categories. An electronic order form for a stereo system might include fields for whether the system contains a CD player or Dolby technology.

"What we're trying to do is not be a free-for-all. We've set

parameters. We have predesignated forms, and there is no form for cocaine, for example," said Jacques Wagemaker, a company spokesman. "If you

went in and tried to buy a body part, there's no way the system would distribute it [to potential sellers] because it's not my programmed to do it." ■

You Can't Always Buy What You Want

A sample of eBay- or user-halted auctions include:

August	■Bay removes listings for three babies
	■A Florida teen offers to sell his virginity; high bid was $4 before auction was pulled
June	200 "pure, uncut pounds of everyone's favorite white drug" (cocaine) are offered for $2M before they're pulled 18 hours later
May	An oil painting by Vincent Van Gogh sells for $9M before the deal flops because the painting's authenticity couldn't be verified
April	16 high-tech workers offer to sell themselves ("team of high-priced, professionally trained cyberpunks") for $3.14M, before they pull the offering themselves
February	eBay bans the sale of guns and ammunition after offerings for missiles, bazookas ($575), nerve gas canisters ($102), rocket launchers and semi-automatic handguns are reported on the site

Microsoft Users Cool to 'PC Plus'

well over $8 billion in the past four years just on investments in non-PC technology and high-speed and wireless data communications, according to a Computerworld study.

Corporate users see Microsoft as an important player in their Internet plans. But Microsoft's desktop dominance guarantees it little now.

In a Computerworld survey of 103 information technology managers, Microsoft received a mediocre rating from users regarding how well it is addressing non-PC clients (see chart, page D).

But Microsoft is stepping up its rhetoric to convince users it is the vendor of choice in that space. In June, Chief Operating Officer Bob Herbold dedicated much of his keynote address at PC Expo to Windows CE. And at a July analyst briefing, Microsoft President Steve Ballmer explained that the company is trying to expand beyond its PC-centric focus to enable other alternative clients.

"While we think PCs will re-

main the central device in some senses of the information revolution, we certainly admit the fact that there are going to be lots of other devices, some terminals, handheld devices, television-based devices, etc.," Ballmer said.

The respect the company has earned from users so far varies, and it isn't command-ing. "Microsoft is certainly competing, but it is not leading the pack the way they have in the past [on the desktop]," said Mike Koehler, vice president of technology at Ameritrade Food Distribution Inc., a $2.4 billion company in Addison, Texas. "The other competitors are on an even playing field [with Microsoft]. The Palm-Pilot is a good example."

At State Street Bank in Boston, employers can use handheld computers based on either Microsoft's Windows CE operating system or 3Com Corp.'s Palm Computing environment, said George Abbott. IS manager at the bank's cash management division. Abbott said he believes that Microsoft

could eventually come to dominate the handheld market, but the users in his division now use Palm devices because they can take much fuller advantage of Lotus Notes.

The latest Windows CE devices, called Jupiter machines, have taken off slowly [Technology, Aug. 2], although in Computerworld's survey, 18% of managers said their organization has at least some Windows CE systems.

Abbott and Koehler said Microsoft's cloud means it must be watched closely, but users' patronage isn't assured the way it is on the desktop. The market isn't dominated by Windows, and other choices are at least equally appealing, users said.

In the set-top box market,

Microsoft faces competition from at least three major operating environment vendors that also are on the way to deployment on millions of set-top boxes, said Bill Thomas, senior vice president of product development at TV Guide Networks Inc. in Tulsa, Okla., which develops programming guides for set-top systems.

Some observers view Microsoft's PC heritage as a liability as the vendor tries to assert credibility in a thin-client world. "Microsoft is afraid of jeopardizing their own business model, and that will keep their hands tied," said Neil McDonald, an analyst at Gartner Group Inc. in Stamford, Conn.

Others are concerned about Microsoft's transition from an engineering perspective.

"My concern is that it is an unfamiliar place for them," said Forrest L. Jerome III, director of technology information systems at Colgate-Palmolive Co.'s technology center in Piscataway, N.J. He said Microsoft's familiar ground is large operating systems and applications designed for "fat" systems with lots of memory and storage. "They have not been able to demonstrate skills at optimization," Jerome said.

Still, Microsoft's approach to the market has its share of fans.

Bill Nicholson, IS director at Catellus Development Corp., a nationwide real estate company in San Francisco, said Microsoft has a stronger understanding of client-side computing and the end user than most of its major competitors. Catellus has studied what technology new home buyers will desire, and Nicholson feels Microsoft is well-positioned to address those needs. It just may take Microsoft a little more time to satisfy the marketplace, he added.

"Microsoft has historically proven that they get into something, they do a decent job with it, they get some flack for it, and then they come back and do it right," Nicholson said. ■

AMOUNT	COMPANY/CATEGORY
$8B	AT&T, set-top boxes (May 1999)
$1B	Comcast, PC/TV convergence (June 1997)
$600M	Nextel, wireless Internet (May 1999)
$500M	NTL, voice/video/data convergence (January 1999)
$425M	WebTV, Internet on TV (April 1997)

ABP

FRANK HAYES/FRANKLY SPEAKING

Sanity check, please

IT HAPPENED AGAIN LAST WEEK: another big-time gaffe at a retailer's Web site. This time it was English catalog company Argos, whose online operation offered 21-in. Sony TV sets for £3 (about $4.75) instead of the £299.99 they were supposed to go for. It was a simple glitch — a rounding error, a couple of zeroes dropped — but nobody at Argos noticed the problem until bargain-happy Britons had ordered more than £1 million worth of TVs.

Now Argos argues it doesn't have to ship the TVs because it never confirmed the orders. Some English legal beagles say not so fast; the company faces possible lawsuits for false advertising. And —

worse"— its reputation now stinks with thousands of teed-off customers.

This kind of blunder could only happen on the Web. Because the Web is the only place where human sanity checks have been stripped out of retailing, replaced by ... well, nothing.

It couldn't happen in an ordinary, low-tech store. Even the dimmest checkout clerk would notice insanely low prices. It couldn't happen by mail order or over the phone, where there are always people in the loop between customers and the order entry system. The first time anyone tried buying a $3 TV, a $299 computer or a $98 car, the foul-up would be found. Sorry, folks — no sale.

But with database-generated, fully automated Web shopping, who needs salespeople? So one keystroke gone awry can automatically drive a deep-cut discount onto your virtual showroom. And you can easily sell a million dollars of goods before someone spots the problem.

So how to protect against this kind of garbage-in/garbage-out craziness?

Easy — just add a moderately experienced salesperson or two to the Web site's quality control team.

Call them sanity checkers. Every time a change is made to the site — new product, special offer, design change — your low-tech, merchandise-knowledgeable QC person vets it immediately to make sure it's right.

Insane prices, impossible product descriptions and idiotic formatting will pop right out at a sanity checker. So will more subtle things that make your site hard to navigate and use, like cluttered screens or pages that require constant scrolling.

To avoid Web screw-ups, add a low-tech pair of human eyes.

And between changes, a sanity checker can monitor the site, watching for slowdowns, lockups and other problems. It just takes one set of sales-trained eyes to make your Web store better on a day-to-day basis — and every now and then save you from truly embarrassing (and potentially very costly) screw-ups.

Simple, right?

So what's the catch? It's this: The very idea of a sanity checker is as politically incorrect as they come.

Adding a sanity checker makes your IT quality-control people look like they're not doing their job. It suggests that the fancy database-driven Web-commerce system isn't as good as you made it sound. It means adding a warm body (and not even a techie warm body) to what was supposed to be a fully automated system.

Which is exactly why it's your IT shop — not marketing or upper management or some outside consultant — that should be campaigning for a sanity checker.

Face it, if anyone else starts promoting this idea, it makes IT look bad. Sloppy. Incompetent.

But if the idea comes from you, you can spin it as a shining example of a commerce-savvy IT shop going after what's best for the business, even if that means a low-tech solution.

Who says we can't play the sanity card?

So start pushing for that sanity checker. Or when the next big e-commerce gaffe happens, yours could be the Web site that's gone insane. ▪

Hayes, Computerworld's staff columnist, has covered IT for 20 years. His e-mail address is frank_hayes@computerworld.com.

The 5th Wave

"So much for the Graffiti handwriting system."

MISSION

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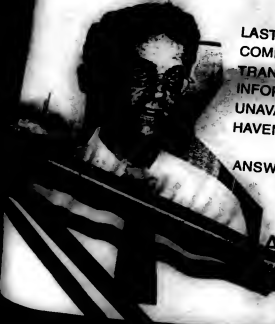and apps that *run* it.**

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